



# The Effect of Citizens' Perception of Governance on Tax Compliance: A Cross-Country Analysis Study for 32 Sub-Saharan African Countries

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Accepted: 15 February 2024  
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## Abstract

Raising domestic revenue still represents a priority for most Sub-Saharan African countries that continue to face high tax non-compliance. This research investigates whether there is a link between citizens' perceptions of governance and individual tax compliance in SSA. We employ a logistic regression model by applying five levels of specifications and using round 7 of the Afrobarometer, which contains information on Africans' views on democracy, governance, economic reform, civil society, and quality of life for 32 countries. The main results suggest that perceptions of governance and attitudes towards tax compliance are positively associated, and their impact differs by country. The study proposes a binary mediation analysis to investigate the direct and indirect effects of governance perception on individual tax compliance, with trust in institutions serving as a mediator. Our findings suggest that a negative perception of governance may influence the trust in institutions and affect willingness to pay taxes.

**Keywords** Tax compliance · Perception of governance · Sub-Saharan Africa · Tax revenue · Regression analysis · Binary mediation analysis

**JEL Classification** C21 · C25 · H26 · Z18

## Résumé

L'augmentation des recettes intérieures reste une priorité pour la plupart des pays d'Afrique subsaharienne (ASS) qui continuent de faire face à une forte non-conform-

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ité fiscale. Cette recherche examine s'il existe un lien entre les perceptions des citoyens sur la gouvernance, et la conformité fiscale individuelle en ASS. Nous utilisons un modèle de régression logistique en appliquant cinq niveaux de spécifications et en utilisant le round 7 de l'Afrobaromètre, qui contient des informations sur les vues des Africains sur la démocratie, la gouvernance, la réforme économique, la société civile, et la qualité de vie pour 32 pays. Les principaux résultats suggèrent que les perceptions de la gouvernance et les attitudes envers la conformité fiscale sont positivement associées, et leur impact diffère selon les pays. L'étude propose une analyse de médiation binaire pour enquêter sur les effets directs et indirects de la perception de la gouvernance sur la conformité fiscale individuelle, avec la confiance dans les institutions servant de médiateur. Nos résultats suggèrent qu'une perception négative de la gouvernance peut influencer la confiance dans les institutions et affecter la volonté de payer les impôts.

## Resumen

Aumentar los ingresos internos sigue siendo una prioridad para la mayoría de los países del África subsahariana (ASS) que continúan enfrentando una alta evasión fiscal. Esta investigación investiga si existe una relación entre las percepciones de los ciudadanos sobre la gobernanza, y el cumplimiento individual de los impuestos en la SSA. Empleamos un modelo de regresión logística aplicando cinco niveles de especificaciones y utilizando la ronda 7 del Afrobarómetro, que contiene información sobre las opiniones de los africanos sobre democracia, gobernanza, reforma económica, sociedad civil y calidad de vida en 32 países. Los principales resultados sugieren que las percepciones de la gobernanza y las actitudes hacia el cumplimiento de los impuestos están positivamente asociadas, y su impacto difiere por país. El estudio propone un análisis de mediación binaria para investigar los efectos directos e indirectos de la percepción de la gobernanza en el cumplimiento individual de los impuestos, con la confianza en las instituciones actuando como mediador. Nuestros hallazgos sugieren que una percepción negativa de la gobernanza puede influir en la confianza en las instituciones y afectar la voluntad de pagar impuestos.

## Introduction

Tax compliance in low-income countries (LIC) has received increasing attention in recent decades, fuelling the debate about how to close the gap in tax receipts with developed countries (Moore and Prichard 2017; Pichard et al. 2019; Bachas et al. 2021; Santoro and Mascagni 2022). While in high-income countries (HIC), the tax-to-GDP ratio ranges around 30% or higher, it sits at about 15% for the SSA region, with 29 countries below this threshold (Aslam et al. 2022). This gap translates into lower levels of investment in public goods, such as infrastructure and governance, as well as low levels and limited coverage of social protection benefits, provoking a cycle in which low- and middle-income countries (MIC) continue to have high levels of poverty (Bachas et al. 2021).



Focusing on tax morale can provide a more comprehensive view of the relationship between citizens and governments in low-income countries. However, a consistent portion of the existing literature on taxation (Bahl and Bird 2008; Besley and Persson 2014; Kangave et al. 2016) blames a non-compliance culture for low tax revenue levels. This study aims to investigate if there is a relationship between citizens' perception of governance and individual tax compliance in SSA. This research uses a logistic regression model using a cross-sectional dataset. Moreover, the study proposes a mediation analysis to investigate the direct and indirect effects of the perception of governance on individual tax compliance with trust in institutions as a mediator.

Our findings evidence that perception of governance is positively associated with tax compliance in some selected SSA countries. However, the relationship changes significantly across countries. Trust in institutions, opinion on government services, and wealth level also affect tax compliance, while socio-demographic variables have a marginal impact on paying taxes. Furthermore, almost 90% of the total effect of the perception of governance on tax compliance is direct.

The research should contribute to the existing literature on individual tax compliance in SSA countries at three points. First, the work aims to expand tax compliance knowledge in the SSA region. Second, it is one of the firsts to investigate individual tax compliance, considering the taxpayer's narrative and proposing a relationship between it and the perception of governance as the leading cause in the SSA region. Third, the study goes beyond the simple relationship between citizens' perception of governance and individual tax compliance, applying a mediation analysis with trust in institutions as a mediation term.

The structure of this article is organised as follows: “[Previous studies on tax compliance in SSA countries](#)” section discusses the related literature on tax compliance in SSA countries. “[Study setting](#)” section describes the study setting and justifies our focus on the SSA region. “[Methodology and Descriptive Statistics](#)” section provides an overview of the methodology and descriptive statistics. “[Logistic regression model analysis](#)” section explains the logistic regression analysis that we performed. “[Logistic regression results](#)” section reports the logistic analysis results. “[Mediation analysis](#)” section describes the binary mediation analysis and its outcomes. “[Discussion](#)” section reports our discussion of the results, while “[Conclusions](#)” section concludes.

## **Previous Studies on Tax Compliance in SSA Countries**

Recent literature on tax compliance agrees that at least two aspects emerge when questioning why people pay taxes. The first theory argues that taxpayers are discouraged from evading taxes by enforcing policies and actions of administrations. The second refers to the citizen's willingness to pay, called tax morale. Regarding this element, a large piece of research focused on the connection between trust and compliance (Scholz and Lubell 1998; Levi and Stoker 2000; Bornman 2015; Batrancea et al. 2019). Daude et al. (2012) and Bräutigam et al. (2008) explain that citizens are more willing to pay taxes because they expect to receive public goods in return.



## Fiscal Social Contract

The term fiscal social contract refers to an agreement between citizens and governments under which the former agrees to pay taxes used by the latter to carry out programs and provide services for the common good (Umar et al. 2017). In the SSA region, this needs to be revised for two reasons. To begin with, the taxes raised need to translate into improvements in the delivery of public services sufficiently, and the benefits of governance appear to benefit only a few. Furthermore, the work of revenue authorities in this region becomes more complicated when they are expected to mobilise revenues despite having limited information on how previous revenues were used. In this context, it is particularly difficult to communicate with taxpayers about their tax obligations when there is no visible evidence of the benefits they derive from their taxes (African Center for Economic Transformation 2020).

Recent literature (Weinberg 2022; Razavi et al. 2020) evidence that COVID-19 is undermining the fiscal social contract in many countries. The limited capacity of many governments to respond effectively to the crisis, mitigate shocks, and protect the most vulnerable is eroding the state's base (Razavi et al. 2020). Rieger and Wang (2021) studied people's perceptions of government reaction in 57 countries from March to April 2020, finding that a too-weak response to the crisis corresponds to a decrease in trust in government. Abumere (2021) uses Nigeria as an example of a broken fiscal social contract between taxpayers and the government. Following the imposition of a lockdown and the subsequent closure of many businesses, business owners were required to honour their fiscal social contract by paying taxes despite having a revenue source and receiving no government benefit.

COVID-19 in Africa exacerbates an already weak fiscal social contract between citizens and the state. On the one hand, different Afrobarometer surveys (Afrobarometer. 2022; Seydou 2022; Kodiaga and Nannozi 2021) show that many citizens do not trust the government and claim unfair assistance.

## Trust and Tax Compliance

Some scholars like (Kangave et al. 2016) argue that the low capacity to generate adequate tax revenues in developing countries must be linked to non-compliance, especially by the wealthy of the society. Following this line of thinking, some studies attributed part of the blame to a culture of non-compliance among citizens (Bahl and Bird 2008; Besley and Persson 2014). Umar et al. (2017) reject these convictions, underlining that most of the studies on tax compliance in developing countries do not consider the taxpayers' narrative, leaving a gap in understanding the phenomenon of tax compliance in these countries.

Recent studies have focused on people's views to understand what causes taxpayers' avoidance in Africa. Ali et al. (2014) conducted a cross-country analysis of taxpayers' attitudes in Kenya, Tanzania, South Africa, and Uganda, evidencing that those citizens who are more satisfied with public service provision are more likely to have a tax-compliant attitude in all the four countries. Jahnke and Weisser (2019)



conducted a quantitative analysis of 33 African countries to investigate the impact of perceived corruption in the nation on citizens' tax morale, concluding that this has a negative effect. Additionally, Boly et al. (2020) addressed the relationship between corruption and African tax compliance using Afrobarometer data and pointed out that the quality of governance can influence tax morale.

## Perception of Governance and Tax Compliance

Everest-Phillips and Sandall (2009) affirm that even though various factors might influence tax compliance, the importance of governance should not be underestimated. Alabede et al. (2011) state that a better tax system with good governance improves compliance. In contrast, the failure of the government to provide citizens with public amenities and infrastructure may force them not to comply with tax provisions. For (Khwaja et al. 2020), a low willingness to pay taxes is a symptom of citizens' disengagement due to inadequate service provision.

Togler et al. (2007) demonstrate how governance impacts tax compliance. Cummings et al. (2009) found that individual perceptions of good governance increase tax compliance. However, the relationship between tax compliance and quality of governance remains to be studied in the existing literature review, especially in developing countries (Sebele-Mpofu 2020). According to (Everest-Phillips and Sandall 2009), p. 3), this is the "least understood but most fundamental dimension of tax compliance".

## Study Setting

Figure 1 indicates that the SSA region has the largest share of the population not covered by social protection (76.3%). Furthermore, 72.4% of the population in the first quintile (poorer) is unprotected. Compared to the other regions displayed in the table above, this translates into the lowest level of poverty gap and poverty headcount reduction in the first quintile (World Bank 2021).

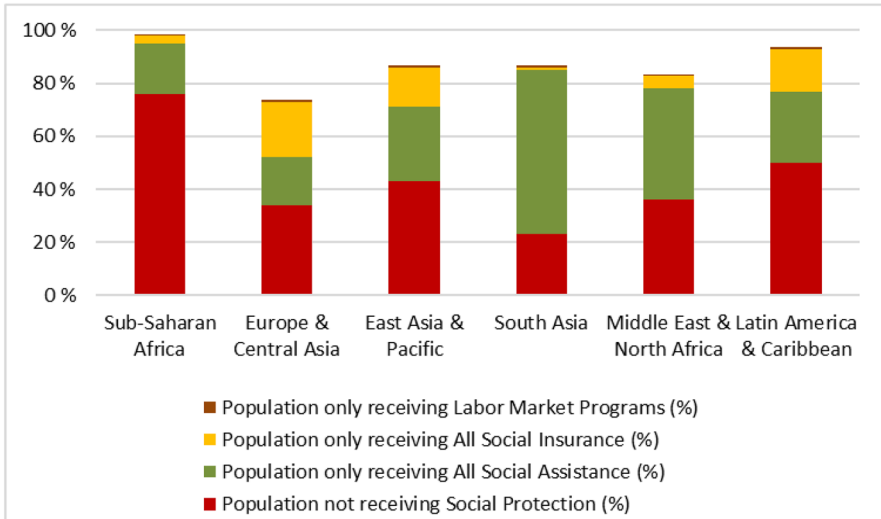
A weak social protection system might be linked to low tax revenue. LIC and MIC spend lower shares of total social spending on social protection compared to higher-income countries. Durán-Valverde et al. (2019) show that LIC and MIC faced a US\$527 billion gap<sup>1</sup> in social protection financing before the Pandemic, while (Gentilini et al. 2022) show that LIC spent, on average, US\$ 8 per person on social protection COVID-19 responses, while LMIC US\$ 45, UMIC US\$ 145, and HIC US\$ 716 for social security and labour spending.

In the SSA context, the weakness of institutional capacity to design and deliver (especially at scale) social protection programs is still a fundamental problem,

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<sup>1</sup> The financing gap is the difference between the estimated total cost of a universal package of four SPF benefits in 2019 (2.4% of GDP; see Table 5) and the estimated social assistance expenditure in the same year (Durán-Valverde et al., 2019).





**Fig. 1** Share of population covered by social protection and labour market programs. *Source* Authors' illustration using World Bank (2021) data (Note that the bars do not add up to 100% due to the share of the population that receives more than one type of social protection displayed in the figure.)

especially in fragile contexts, provoking a paradox; the more need for social protection there is, the less the government can deliver it (Holmes and Lwanga-Ntale 2012).

According to the (World Bank 2022) data, the SSA region has a tax-to-GDP ratio lower than the global average of 15%, which is usually associated with accelerated growth and development. In 2019, only ten SSA countries were above this threshold.

Recent research evidence that corruption, bureaucracy quality, government effectiveness, and political stability affect tax compliance (Günay and Topal 2021); Jahnke and Wessier, 2019; Fjeldstad et al. 2014).

## Methodology and Descriptive Statistics

The study aims to contribute to understanding citizen tax avoidance by responding to the question: “Does the perception of governance influence tax compliance in Sub-Saharan Africa?”.

The analysis uses round 7 of Afrobarometer, which refers to 2018, to analyse the likelihood of a citizen paying taxes depending on its perception of governance. A merged dataset on 32 SSA countries (Benin, Botswana, Burkina Faso, Cabo Verde, Cameroon, Côte d’Ivoire, Eswatini, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, São Tomé and Príncipe, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe) has been used.

Although the Afrobarometer does not only focus on taxation in Africa but also includes questions about Africans’ views on democracy, governance, economic



reform, civil society, and quality of life, it represents a reliable and valid data source due to the difficulties in finding high-quality cross-country surveys at individual levels in the SSA region.

The dataset has 42,735 observations and contains demographic information about the respondent's employment status, education, sex, age and whether they live in urban or rural areas. Because the dataset does not provide information on individual income, the study built a wealth indicator using a proxy means test already developed by (Justesen and Bjørnskov 2014) and used by Jahnke and Wisser (2019). The proxy variable d how often during the past year, they or anyone in their family have gone without: (a) enough food to eat, (b) enough clean water for home use, (c) medicines or medical treatment, (d) enough fuel to cook food, (e) a cash income. The responses are coded on a five-point scale from "never" to "always". We consider that an individual lives in poverty and deprivation when the score is low. In contrast, a low value indicates that an individual lives in materially good conditions in the sense that they do not lack necessities on a regular basis.

We identify as dependent variable question 38C: "For each of the following statements, please tell me whether you disagree or agree: The tax authorities always have the right to make people pay taxes" and was assigned a value of 0 or 1. If they avoid paying taxes, they get a 0; otherwise, they get a 1. If the respondent selected the answer indicating tax avoidance at least once, a value of 0 was assigned to that individual for the dependent variable. Question Q26D "Here is a list of actions that people sometimes take as citizens when they are dissatisfied with government performance. For each of these, 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?" has been selected as the main independent variable. This variable assigns a 0 to those who indicated a refusal to pay taxes with their response and a 1 to those who do.

Two additional independent variables have been included in the model: trust in institutions (Q43A, B and D) and score on government services (Q49B, E and M). According to previous studies on tax compliance that use Afrobarometer data (Jahnke and Wisser 2019; Ali et al. 2014; Justesen and Bjørnskov 2014) the following demographic variables have been added: gender, age, education, employment status, urban and country.

The variables trust in institutions are the result of combining three separate questions (Q43A, B, and D), in which respondents were asked how much they trust the President (Q43A), Parliament (Q43B), and the local government council (Q43C). The variable displays a score ranging from 0 to 1, with 0 representing the lowest level of trust and 1 representing the highest.

The variable score on government services merges the questions Q49B, E and M. In these questions, it was asked the respondents how easy or difficult it was to obtain the services they needed from teachers or school officials (Q49B), to obtain the medical care needed (Q49E) and to obtain household services (Q49M).

Table 1 below displays the descriptive statistics of all the variables included in the logistic regression model in round 7. Table 4 in the Appendix reports the variables



**Table 1** Descriptive statistics

Variable	Mean	Median	Minimum	Maximum	Observations
(1) Socio-demographic characteristics and dependent					
Gender	–	1	0	1	28,891
Age	41	35	18	106	28,891
Education	–	4	0	9	28,891
Occupation status	–	3	0	13	28,891
Country	–	–	1	34	28,891
Urban	–	1	0	1	28,891
Wealth	0.65	0	0	4	28,891
Individual tax compliance (dependent)	0.79	0	0	1	28,891
(2) Main independent variable					
Perception of governance	0.71	0	0	1	28,891
(3) Other variables					
Trust in institutions	0.51	1	0	1	28,891
Government score	2	2	1	4	28,891

*Source* authors' calculation based on Afrobarometer round 7 (2018) data

used to build the wealth indicator, and Table 5 the frequency and percentage of each socio-demographic variable.

We employ a logistic regression analysis on round 7 of Afrobarometer (the most recent available round) to examine the likelihood of an individual paying taxes depending on its perception of governance. Furthermore, the analysis applies the same models in round 6 to improve consistency and confirm the logistic regression outcomes. This step seeks to verify that what was observed in round 7 is not a single and distinct phenomenon that occurs at a different time.

Following the analysis performed by (Jahnke and Weisser 2019), we conduct a binary mediation analysis to propose a mechanism by which the perception of governance experience may influence tax compliance. Within this framework, we can first show if lower levels of trust in institutions are associated with lower tax compliance.

The perception of governance can explain reduced trust in institutions. Finally, this mediation analysis allows separating the direct and indirect effects of perception of the governance via trust in institutions and quantifying the effects' relative impact.





## Limitations

The analysis presents some limitations. The Afrobarometer survey is not restricted to the taxpayers but includes anyone at least 18 years of age. The term people, included in our dependent variable, does not distinguish between those in a position (and must) paying taxes and those not (e.g. because they are below a certain threshold and are exempted). As a result, our analysis also includes people who, due to economic or social circumstances, do not pay the majority of taxes, such as informal workers. This may reduce the reliability of the results because the dataset focuses on citizens' perceptions of governance rather than taxpayers' perceptions of governance and tax compliance.

Another factor that should be considered is that capacity to collect taxes and the tax revenue level can influence the ability of the state to govern well and provide services. For example, (Bratton 2012) reports that a recent study in Tanzania and Zambia found that local governments in both countries increased the delivery of public services in proportion to their budget's share of local taxes.

Several factors can have an impact on tax compliance. As previously stated, because Afrobarometer does not solely focus on taxation, the dataset does not include any information on government's capacity to collect taxes. As a result, it is impossible to determine whether a citizen decides to pay or not pay taxes based on factors such as penalty, tax system fairness, tax rate, probability of detection and being audited. The citizen's perception of governance is based on a broad question about government performance and does not include the respondent's perception of the tax system. Furthermore, citizen perception of governance is not purely a policy variable and can be influenced by the media or other factors.

The study uses a cross-sectional dataset, and for this aspect, it cannot observe the relationship across time.

On the other hand, other Afrobarometer surveys have been used for similar studies on tax compliance with valid and trustworthy results. Although Afrobarometer is not limited to taxation, it is a viable option because it is the only survey containing homogenised data on economic, political, and social aspects in primarily Sub-Saharan African countries.

## Logistic Regression Model Analysis

We apply a logistic regression model (Eq. 1) to investigate the likelihood of an individual paying taxes based on their perception of governance in the SSA countries. Even though the countries under study have different population characteristics, it has been possible to identify a unique logistic regression model capable of measuring the relationship under study.

Equation 1. General logistic regression model equation



**Table 2** Logistic regression model results

Variables	1st	2nd	3rd	4th	5th
Perception of governance	0.29***	0.29***	0.29***	0.29***	0.68***
Trust in institutions	0.68***	0.68***	0.73***	0.74***	–
Government service score	– 0.12***	– 0.13***	– 0.13***	– 0.13***	– 0.15***
Wealth indicator	0.08***	0.09***	0.07***	0.07***	0.07***
Age	–	0.00	0.00	0.00	0.00
Gender	–	– 0.08**	– 0.08**	– 0.07**	– 0.07**
Urban area	–	–	– 0.33***	– 0.31***	– 0.29***
Country	–	–	0.02***	0.02***	0.02***
Education	–	–	–	0.01*	0.01*
Occupation status	–	–	–	0.00**	0.00**
Constant	1.08***	1.11***	0.99***	0.90***	1.26***

Source authors' calculation based on Afrobarometer round 7 (2018) data

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0$ . Number of obs 28,891

$$(Y) = P = \frac{\exp(\beta_0 + \beta_1 x)}{1 + \exp(\beta_0 + \beta_1 x)} \quad (1)$$

Given the variables described in the previous section, we built the following equation for our logistic regression model (equation b).

Equation 2. Logistic regression model equation for round 7

$$E(Y) = P = \frac{\exp(\beta_0 + \beta_1 \times I + \beta_2 \times II + \beta_3 \times III + \beta_4 \times IV)}{1 + \exp(\beta_0 + \beta_1 \times I + \beta_2 \times II + \beta_3 \times III + \beta_4 \times IV)} \quad (2)$$

Y = taxes; I = perception of governance; II = trust in institutions; III = government service score; IV = wealth score.<sup>2</sup>

## Logistic Regression Results

The null hypothesis in the analysis is that citizens' perceptions of governance in relation to social and tax systems influence individual tax compliance in SSA countries. The null hypothesis is rejected because the  $p$  value of the variable perception of governance is statistically significant at 0.01 level of significance. This means the relationship between the perception of governance and individual tax compliance in SSA countries is statistically significant. The greater the perception of governance, the more likely individuals are to pay taxes.

<sup>2</sup> The equation displays the main independent variables used. The following dummy variables have been added: age, gender, urban/rural area, country, education and occupation status.



The table below shows the logistic regression model and the five levels of specifications used (they differ in the number of dummy variables included). Indeed, the first level is represented by equation b without incorporating any dummy variable. In the following levels, we add one or more dummies. The last logistic regression model's level displays an interaction between the perception of governance and trust in institutions. All of this is displayed in Table 2.<sup>3</sup>

From here on, all the results highlighted in the text are statistically significant (refer to Table 2 to know the significance level of each variable). Introducing one or more dummy variables does not cause a large change in the main independent variables and their significance level. Given this aspect, we decided to describe the results of the fourth and fifth logistic regression models that contain all the dummy variables.

In the fourth logistic model, the primary main independent variable, perception of governance, is positively associated with the dependent variable (tax compliance). Indeed, holding all other independent variables constant, we expect a 0.29 increase in the log odds of individual tax compliance if the opinion of governance is positive. Also, trust in institutions has a positive impact on the dependent variable. For any additional unit of trust in institutions, we expect a 0.74 increase in individual tax compliance.

The opinion on government score indicates how easy it is for an individual to obtain a service from the government (with one indicating very easy and four indicating very difficult), and it has a negative effect on individual tax compliance. This means that if it is much more difficult for an individual to receive a government service, the log odds of the dependent variable decrease by 0.13.

The variable wealth score, a proxy for individual income, is positively associated with tax compliance. Holding all other independent variables constant, we expect a 0.07 increase in the log odds of individual tax compliance for each additional unit of wealth score (in other words, for any additional level of wealth score). The variable urban area has a negative effect on the dependent variable. This means that for every additional unit of this variable (moving from rural to urban), we can expect a  $-0.31$  decrease in the log odds of the dependent variable, assuming all other variables remain constant. The variable country has a coefficient of 0.02.<sup>4</sup>

The gender variable has a negative coefficient of 0.07. This means that if the person's gender is male rather than female, the log odds of the dependent variable will decrease by 0.07. All other variables will remain constant. Education has a positive effect on the dependent variable, so we can expect an increase of 0.01 in the log odds of the dependent variable for each higher level of education, assuming all other variables will remain constant.

<sup>3</sup> Please see Table A7 in the Appendix for the fourth logistic regression model results specifying the dummy variables: country, education, and occupation status.

<sup>4</sup> We ran a similar model without the variable "country" to see if any changes occurred (Table 6 in the Appendix). We noticed that the coefficients decreased slightly, but there was no statistical significance change. Furthermore, the pseudo-R squared decreases.



The variable age status is not statistically significant, whereas occupation status is, with a coefficient of 0.00.

We examined deeper the relationship between individual tax compliance and perception of governance by country. We estimated then the probabilities to pay taxes for each level of perception of governance per each country. Figure 2 shows a line plot graph that reports the likelihood of tax compliance for both levels of the main independent variable by country.

Figure 2 shows that the red line, representing citizens' positive perception of governance, is above the blue line for all SSA countries included in the analysis. We can also see that the likelihood of not paying taxes if citizen's perception of governance is negative (equal to zero) varies significantly across countries. Indeed, if the perception of governance is negative, the likelihood of paying taxes in Botswana is nearly 90%, while in Malawi, it is 40%. This distinction also appears when the perception of governance is positive (equal to 1). In Malawi, the probability of paying taxes is always 48% if the perception of governance is positive, whereas, in Sierra Leone, the probability is 96%. When we talk about Sub-Saharan Africa, we should consider the heterogeneity of the countries' settlements and their development trajectories (Cloutier 2022).

The fifth logistic regression model differs from the previous one for the interaction between the perception of governance and trust in institutions, which is statistically significant. The results indicate that holding all the other variables constant, the likelihood of a person with a positive perception of governance to pay taxes is 0.65 higher if trusts institutions. All the other variables have very similar coefficients and p value.

To test the robustness of the analysis, the following tests were performed and successfully passed: multicollinearity test, significant error test, Hosmer–Lemeshow test, Pearson chi-square test, post-estimation—classification results. In addition, we analysed with robust standard error and found the coefficients slightly changed, but the p value remains almost the same. Indeed, the nature of the variables' effects and significance level do not change.

## Mediation Analysis

Further, following the analysis presented by (Jahnke and Weisser 2019), the study employs a binary mediation analysis to propose a mechanism through which the perception of governance can influence tax compliance. We chose trust in institutions as a mediator based on previous studies like that of (Jahnke and Weisser 2019) and (Isbell 2017). Specifically, this framework allows for examining whether higher levels of trust in institutions are also associated with higher tax compliance, thereby separating the direct association between the perception of governance and tax compliance from the indirect effects of trust in institutions. The perception of governance is considered an exogenous factor that can influence individual tax compliance directly and indirectly. The underlying scheme of the mediation analysis is depicted in Fig. 3 below.



**Table 3** Mediation analysis

Binary mediation model	Coefficient	Standard error
(1) Trust in institutions	0.51566***	(0.0045)
Perception of governance		
Constant	0.47260***	(0.0038)
(2) Individual tax compliance	0.10114***	(0.0047)
Trust in institutions		
Perception of governance	0.46108***	(0.0044)
Constant	0.71556 ***	(0.0043)
(3) Mean		
Perception of governance	0.71561***	(0.0022)
<i>N</i>	42,675	
Pseudo <i>R</i> <sup>2</sup>	0.000	
The direct effect of perception of governance on individual tax compliance = 0.46		
The indirect effect of perception of governance on individual tax compliance = 0.052		
Total effect of perception of governance on individual tax compliance = 0.512		

Source authors' illustration based on Afrobarometer round 7 (2018) data

Significance levels: \**p* < 0.1, \*\**p* < 0.05, \*\*\**p* < 0.01

Mediation analysis allows for the decomposition of the observed correlation (*c*) between governance perception (*X*) on tax compliance (*Y*) using three equations that are interrelated in the form of a structural estimation model (SEM).

The total effect is shown in Eq. (3) below. In addition to the direct effect, perception of governance indirectly affects tax compliance through a mediator (*M*), trust in institutions. Equation (5) estimates the association between the perception of governance and the mediators, while Eq. (4) estimates the direct and indirect associations between the mediators and tax compliance. The indirect effect captures the impact of both measures of trust in institutions.

Equations 3, 4 and 5. Structural estimation model

$$Y = i_1 + cX + \epsilon_1, \tag{3}$$

$$Y = i_2 + c'X + b_1M_1 + \epsilon_2, \tag{4}$$

$$M_1 = i_3 + a_1X + \epsilon_3. \tag{5}$$

The mediation analysis suggests that perception of governance and trust in institutions significantly correlate with individual tax compliance. Table 3 displays the results, with models 1 and 2 referring to equations (c) and (d) shown earlier.

The perception of governance has a total effect on individual tax compliance of 0.98, while its direct effect is 0.46. The indirect effect of the perception of governance on tax compliance through trust in institutions is equal to 0.052. All results are statistically significant.



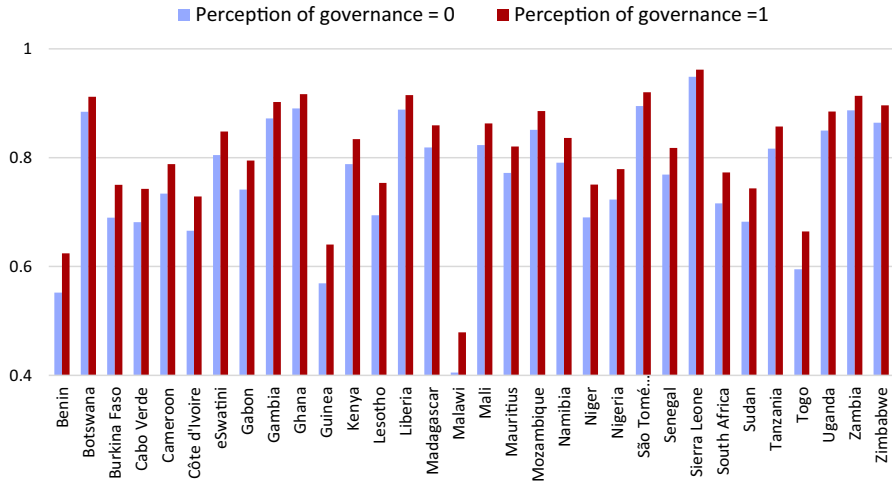


Fig. 2 Probability of paying taxes by perception of governance across SSA countries. *Source* Authors' calculation based on Afrobarometer round 7 (2018) data

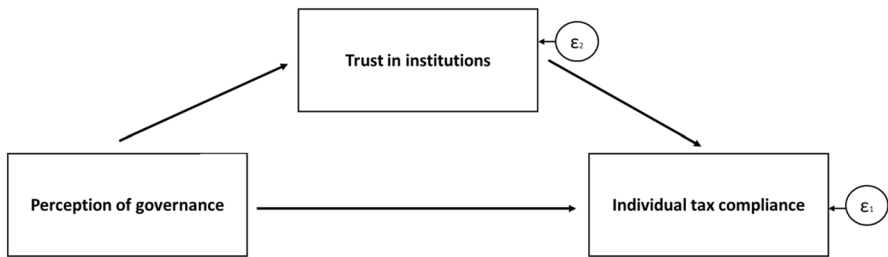


Fig. 3 Framework for binary mediation analysis. *Source* Authors' illustration based on Afrobarometer round 7 (2018) data

## Discussion

This paper provides evidence that citizens' perceptions of governance are positively associated with tax compliance. Indeed, a positive perception of governance might increase a citizen's willingness to pay taxes. Furthermore, we decomposed the total effect of perception of governance in direct and indirect effects by observing its interaction with trust in institutions. Our findings indicate that almost all of the total effect is direct.

The analysis shows that most socio-demographic variables have a marginal impact on citizen's likelihood of paying taxes. In the literature on tax compliance, the role of socio-demographic variables remain unclear. On the one hand, some studies (Ahmed and Braithwaite 2004; Bobek et al. 2007; Wenzel 2007; Kastlunger et al. 2010) show that their impact is significant. On the other hand, other studies (Braithwaite and Ahmed 2005); Richardson, 2006; (Ashby et al. 2009; Muehlbacher et al. 2011; Adimassu and Jerene 2015) indicate the opposite. Hofmann et al. (2017) state that socio-demographic variables in SSA are weak predictors of tax compliance.



Wealthier citizens are more likely to pay taxes, while those who live in urban areas are less likely to pay taxes than citizens who live in rural areas. This might partially be explained because rural residents have lower service delivery expectations and are more satisfied with government performance than urban residents (Bratton 2012).

The analysis reveals that citizens who trust institutions are more likely to pay taxes (trust in institutions has the highest coefficient in the logistic model). In contrast, those with difficulty receiving government services are less likely to pay taxes. Furthermore, our research indicates that perceptions of governance vary significantly across countries, with positive perceptions outweighing negative perceptions in all 32 SSA countries.

We also investigate the case for which perception of governance and trust in institutions (the President of the State, the Assembly of the State, the Tax Authority and the Local Government) may jointly impact tax compliance. Approximately 90% of the total effect observed is a direct effect, e.g. attributable to a negative perception of governance. This implies, eventually that the adverse consequences of individual perception of governance do not solely affect trust in institutions but undermine the willingness to pay taxes in general.

These findings significantly impact national governments' goal of ensuring citizens pay taxes. Our analysis of the relationship between citizens' perceptions of governance and tax compliance finds that poor people who have had difficulty receiving government services and do not trust institutions are more likely to refuse to pay taxes. Countries with low levels of trust in institutions and poor perceptions of governance should revise their targeting techniques, improve their information campaign and ensure more transparency in managing money from tax revenues.

## Conclusions

The study applies a logistic regression analysis using round 7 of the Afrobarometer, containing data from 32 SSA countries. The models show that citizens' perception of governance positively relates to tax compliance and trust in institutions. The interaction between these two variables indicates that they are significantly correlated and directly affect and indirectly affect the individual attitude towards paying taxes. Furthermore, the binary mediation analysis allows us to decompose the perception of governance's impact on tax compliance using mediator trust in institutions. Our findings reveal that almost 90% of the total effect is direct.

The analysis suggests that tax compliance's complexity might go beyond the socio-demographic factors and that the perception of governance is critical in understanding it. However, the significance of perceptions of governance in citizens' attitudes towards tax payments necessitates additional research in this area. Future research might investigate if and how COVID-19 affects the relationship under study. Furthermore, determining which aspects of the perception of governance may elicit the strongest reactions would help determine appropriate policy recommendations to improve tax morale and compliance. Hoy (2022) evidences that progressivity in tax systems and transfers influences tax attitude. Following his work, future literature can follow this line of thinking, analysing the impact of tax and social protection systems on citizens' perception and tax compliance.



The study needs to pay more specific attention to each country's context, which may determine the perception of governance and trust in institutions. An interesting additional step is to focus deeper on some single countries, given the heterogeneity that characterises the SSA region and examine if there are macro aspects (e.g. system of government, media information and public expenditure on social protection) that influence the analysis.

## Appendix

See Tables 4, 5, 6, 7, 8, and 9.

**Table 4** Frequency and percentage of socio-demographic variables

Variables	Freq	Per cent
Age		
18	1434	3.36
25	10,076	23.58
35	12,136	28.4
45	8283	19.38
55	5150	12.05
65	3379	7.91
85	2132	4.99
95	96	0.22
106	49	0.11
Gender		
Male	21,339	49.93
Female	21,396	50.07
Urbrur		
Urban	18,229	42.66
Rural	24,506	57.34
Education		
No formal schooling	6557	15.34
Informal schooling only	1941	4.54
Some primary schooling	6340	14.84
Primary school completed	5620	13.15
Some secondary school/high school	8815	20.63
Secondary school/high school complete	7078	16.56
Post-secondary qualifications	2269	5.31
Some university	1548	3.62
University completed	1976	4.62
Post-graduate	347	0.81
Refused	102	0.24
Don't know	95	0.22
Missing	47	0.11





**Table 4** (continued)

Variables	Freq	Per cent
Occupation status		
Never had a job	4240	9.92
Student	4134	9.67
Housewife/homemaker	3989	9.33
Agriculture/farming/fishing/forestry	10,895	25.49
Trader/hawker/ vendor	4735	11.08
Retail/ shop	1359	3.18
Unskilled manual worker	3221	7.54
Artisan or skilled manual worker	3045	7.13
Clerical or secretarial	532	1.24
Supervisor/ Foreman/ Senior Manager	391	0.91
Security services	733	1.72
Mid-level professional	2186	5.12
Upper-level professional	779	1.82
Other	2253	5.27
Refused	134	0.31
Don't know	63	0.15
Missing	46	0.11

*Source* Authors' calculation based on Afrobarometer round 7 (2018) data



Table 5 List of variables for logit regression model in round 6

Name of the variable	Question	Coding
Taxes	Q.44: Which of the following statements is closest to your view? Choose Statement 1 or Statement 2 <i>[Interviewer: Probe for strength of opinion: Do you agree or agree very strongly?]</i> Q.75A: Not paying for the services they receive from government Q.75B: Not paying the taxes they owe on their income	Taxes equals to 0 if the respondent chose option 3 or 4 for Q44; or option 1 or 2 for Q75A or Q75B Taxes equals to 1 if 0 if the respondent chose option 1 or 2 for Q44; or option 3 or 4 for Q75A or Q75B
Opinion on government (opinion_on_gov)	Q66: How well or badly would you say the current government is handling the following matters, or haven't you heard enough to say? – B: Improving the living standards of the poor – E: Narrowing gaps between rich and poor – G: Improving basic health services – H: Addressing educational needs – I: Providing water and sanitation services – J: Ensuring everyone has enough to eat	Opinion on government is the arithmetic mean (the average) across all the variables
Wealth score (wealth_score)	QA: Over the past year, how often, if ever, have you or anyone in your family: A: Gone without enough food to eat? B: Gone without enough clean water for home use? C: Gone without medicines or medical treatment? D: Gone without enough fuel to cook your food? E: Gone without a cash income?	The responds are coded on a five-point scale from "never" to "always". We consider that an individual lives in poverty and deprivation when the score is, while a low value indicates that an individual lives in materially good conditions, in the sense that they do not lack necessities on a regular basis
Trust in institutions (trust_in_institutions)	Q52: How much do you trust each of the following, or haven't you heard enough about them to say? – A: The President of the Republic – B: Assembly of the Republic – D: The Tax Authority – E: Your Local Government	Trust in institutions is the arithmetic mean (the average) across all the variables



Table 5 (continued)

Name of the variable	Question	Coding
Government service score (gov_service_score)	Q55A: How easy or difficult was it to obtain the services you needed from teachers or school officials?	Government service score is the arithmetic mean (the average) across all the variables
Gender	Q55C: How easy or difficult was it to obtain the medical care you needed?	Gender equals to 0 if male and 1 if female
Urban/rural (urbrrur)	Q55G: How easy or difficult was it to obtain the services you needed?	Urban/rural equals to 0 if urban and 1 if rural
Education	Q101	1. No formal schooling
	Q115	2. Informal schooling only (including Koranic schooling)
	Q97	3. Some primary schooling
		4. Primary school completed
		5. Intermediate school or Some secondary school/ high school
		6. Secondary school/ high school completed
		7. Post-secondary qualifications, other than university, e.g. a diploma or degree from a polytechnic or college
		8. Some university
		9. University completed
		10. Post-graduate



Table 5 (continued)

Name of the variable	Question	Coding
Occupation status (occupation_status)	Q96A	<ol style="list-style-type: none"> <li>1. Never had a job</li> <li>2. Student</li> <li>3. Housewife/ homemaker</li> <li>4. Agriculture/ farming/ fishing/ forestry</li> <li>5. Trader/ hawket/ vendor</li> <li>6. Retail/ Shop</li> <li>7. Unskilled manual worker (e.g. cleaner, labourer, domestic help, unskilled manufacturing worker)</li> <li>8. Artisan or skilled manual worker (e.g. trades like electrician, mechanic, machinist or skilled manufacturing worker)</li> <li>9. Clerical or secretarial</li> <li>10. Supervisor/ Foreman/ Senior Manager</li> <li>11. Security services (police, army, private security)</li> <li>12. Mid-level professional (e.g. teacher, nurse, mid-level government officer)</li> <li>13. Upper-level professional (e.g. banker/finance, doctor, lawyer, engineer, accountant, professor, senior level government officer)</li> </ol>

Source Authors' illustration based on Afrobarometer round 6 (2016) data



**Table 6** List of variables for logit regression model in round 7

Name of the variable	Question	Coding
Tax	<p>Q38: For each of the following statements, please tell me whether you disagree or agree?</p> <ul style="list-style-type: none"> <li>- C: The tax authorities always have the right to make people pay taxes</li> </ul>	<p>Tax equals to 0 if the respondent chose option 1 or 2 of Q38C                      Tax equals to 1 if the respondent chose option 3 or 4 or 5 of question Q38C</p>
Opinion on government (opinion_on_gov)	<p>Q26: Here is a list of actions that people sometimes take as citizens when they are dissatisfied with government performance. For each of these, please tell me whether you, personally, have done any of these things during the past year</p> <ul style="list-style-type: none"> <li>- D: Refused to pay a tax or fee to government</li> </ul>	<p>Opinion on government equals to 0 if the respondent chose option 1 or 2 or 3 or 4 of Q26D                      Opinion on government equals to 1 if the respondent chose option 0</p>
Trust in institutions (thrus_in_institutions)	<p>Q43: How much do you trust each of the following, or haven't you heard enough about them to say?</p> <ul style="list-style-type: none"> <li>- A: The President</li> <li>- B: Parliament</li> <li>- D: Your District Council</li> </ul>	<p>Trust in institutions is the arithmetic mean (the average) across all the variables</p>
Government service score (gov_service_score)	<p>Q49: Now I would like to talk to you about experiences that some people have in accessing certain essential government services</p> <ul style="list-style-type: none"> <li>- B: How easy or difficult was it to obtain the services you needed from teachers or school officials?</li> <li>- E: How easy or difficult was it to obtain the medical care you needed?</li> <li>- M: How easy or difficult was it to obtain the household service?</li> </ul>	<p>The government service score is the arithmetic mean (the average) across all the variables</p>
Wealth score (wealth_score)	<p>QA: Over the past year, how often, if ever, have you or anyone in your family:</p> <ul style="list-style-type: none"> <li>A: Gone without enough food to eat?</li> <li>B: Gone without enough clean water for home use?</li> <li>C: Gone without medicines or medical treatment?</li> <li>D: Gone without enough fuel to cook your food?</li> <li>E: Gone without a cash income?</li> </ul>	<p>The responds are coded on a five-point scale from "never" to "always". We consider that an individual lives in poverty and deprivation when the score is, while a low value indicates that an individual lives in materially good conditions, in the sense that they do not lack necessities on a regular basis</p>



Table 6 (continued)

Name of the variable	Question	Coding
Occupation status (occupation_status)	Q95A: What is your main occupation?	<ol style="list-style-type: none"> <li>1. Never had a job</li> <li>2. Student</li> <li>3. Housewife/ homemaker</li> <li>4. Agriculture/farming/ finishing/ forestry</li> <li>5. Trader/ hawker/ vendor</li> <li>6. Retail/ shop</li> <li>7. Unskilled manual worker (e.g. cleaner, labourer, domestic help, unskilled manufacturing worker)</li> <li>8. Artisan or skilled manual worker (e.g. trades like electrician, mechanic, machinist or skilled manufacturing worker)</li> <li>9. Clerical or secretarial</li> <li>10. Supervisor/ Foreman/ Senior Manager</li> <li>11. Security services</li> <li>12. Mid-level professional (e.g. teacher, nurse)</li> <li>13. Upper-level professional (e.g. banker/finance, doctor, lawyer, engineer, accountant, professor, senior-level government officer)</li> </ol>
Age	Q1: How old are you?	Respondent's age
Gender	Q86A: Your gender	Gender equals to 0 if male and 1 if female
Urban/rural (urbnrur)	Q115: Do you come from a rural or urban area?	Urban/rural equals to 0 if urban and 1 if rural



**Table 6** (continued)

Name of the variable	Question	Coding
Education	Q97: What is your highest level of education?	<ol style="list-style-type: none"> <li>1. No formal schooling</li> <li>2. Informal schooling</li> <li>3. Some primary schooling</li> <li>4. Primary school completed</li> <li>5. Intermediate school or some secondary school/high school</li> <li>6. Secondary school/high school completed</li> <li>7. Post-secondary qualifications</li> <li>8. Some university</li> <li>9. University completed</li> <li>10. Post-graduate</li> </ol>

*Source* authors' illustration based on Afrobarometer round 7 (2018) data



**Table 7** Logistic regression model for round 7 without the variable country

tax	Coef	p value	Sig
Perception on gov	0.296	0	***
Trust in institutions	0.731	0	***
Gov. service score	- 0.13	0	***
Wealth indicator	0.084	0	***
Age	0.001	0.241	
Gender	- 0.07	0.034	**
Urban area	- 0.3	0	***
Education	0.012	0.066	*
Occupation	0.002	0.05	**
Constant	1.181	0	***

*Source* authors' calculation based on Afrobarometer round 7 (2018) data

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

**Table 8** Logistic regression model for round 6

Variables	1st	2nd	3rd	4th	5th
Perception of governance	0.05***	0.06***	0.05**	0.05**	0.13***
Trust in institutions	0.23***	0.21***	0.25***	0.26***	-
Government service score	- 0.09***	- 0.09***	- 0.09***	- 0.09***	- 0.09***
Wealth indicator	- 0.08***	- 0.09***	- 0.08***	- 0.08**	- 0.08***
Age	-	0.01***	0.01***	0.01***	0.01***
Gender	-	- 0.13**	- 0.13**	- 0.12**	- 0.12**
Urban area	-	-	- 0.19***	- 0.16***	- 0.17***
Country	-	-	- 0.01***	- 0.01***	- 0.01***
Education	-	-	-	0.02***	0.02***
Occupation status	-	-	-	0.00	0.00
Constant	- 0.08***	- 0.99***	- 0.76***	- 0.8***	- 0.86***

*Source* authors' calculation based on Afrobarometer round 6 (2016) data

Number of obs 33,535

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$





**Table 9** Logistic regression model for round 7 specifying dummy variables

tax	Coef	St.Err	t-value	p value	[95% Conf	Interval]	Sig
opinion_on_gov	0.257	0.032	8.02	0	0.194	0.32	***
trust_in_institutio	0.57	0.037	15.41	0	0.498	0.643	***
gov_service_score	- 0.089	0.02	- 4.51	0	- 0.127	- 0.05	***
proxy_income	0.025	0.017	1.51	0.131	- 0.007	0.057	
age	0.004	0.001	4.00	0	0.002	0.006	***
Q10. Gender							
Female	- 0.062	0.032	- 1.95	0.051	- 0.125	0	*
URBRUR							
Rural	- 0.107	0.034	- 3.17	0.002	- 0.174	- 0.041	***
Country: base							
Benin							
Botswana	1.778	0.178	9.99	0	1.429	2.127	***
Burkina Faso	0.624	0.1	6.26	0	0.429	0.819	***
Cabo Verde	0.49	0.097	5.04	0	0.299	0.681	***
Cameroon	0.721	0.109	6.61	0	0.507	0.934	***
Cote d'Ivoire	0.41	0.097	4.23	0	0.22	0.601	***
eSwatini	1.091	0.112	9.72	0	0.871	1.311	***
Gabon	0.688	0.1	6.90	0	0.492	0.883	***
Gambia	1.767	0.132	13.43	0	1.509	2.025	***
Ghana	1.763	0.109	16.12	0	1.549	1.978	***
Guinea	0.124	0.092	1.34	0.179	- 0.057	0.305	
Kenya	1.025	0.101	10.13	0	0.827	1.224	***
Lesotho	0.542	0.102	5.31	0	0.342	0.742	***
Liberia	1.681	0.126	13.32	0	1.434	1.928	***
Madagascar	1.261	0.107	11.75	0	1.051	1.471	***
Malawi	- 0.778	0.101	- 7.67	0	- 0.977	- 0.579	***
Mali	1.463	0.114	12.85	0	1.24	1.686	***
Mauritius	1.042	0.118	8.82	0	0.81	1.273	***
Mozambique	1.446	0.1	14.46	0	1.25	1.642	***
Namibia	0.931	0.111	8.41	0	0.714	1.148	***
Niger	0.515	0.104	4.96	0	0.312	0.719	***
Nigeria	0.716	0.093	7.66	0	0.533	0.899	***
SAo Tome and Principe	1.783	0.125	14.24	0	1.537	2.028	***
Senegal	1.024	0.106	9.67	0	0.816	1.231	***
Sierra Leone	2.669	0.176	15.15	0	2.323	3.014	***
South Africa	0.567	0.096	5.92	0	0.379	0.754	***
Sudan	0.256	0.102	2.49	0.013	0.055	0.456	**
Tanzania	1.189	0.097	12.25	0	0.998	1.379	***
Togo	0.035	0.093	0.38	0.704	- 0.147	0.218	
Uganda	1.411	0.123	11.46	0	1.17	1.653	***
Zambia	1.702	0.129	13.19	0	1.449	1.955	***
Zimbabwe	1.484	0.123	12.07	0	1.243	1.725	***



**Table 9** (continued)

tax	Coef	St.Err	t-value	p value	[95% Conf	Interval]	Sig
Q97. Education of							
Informal schooling	0.055	0.076	0.73	0.463	- 0.093	0.204	
Some primary school	0.124	0.055	2.28	0.023	0.017	0.231	**
Primary school com	0.213	0.06	3.53	0	0.095	0.331	***
Some secondary school	0.355	0.056	6.38	0	0.246	0.464	***
Secondary school	0.42	0.062	6.80	0	0.299	0.541	***
Post-secondary	0.506	0.087	5.78	0	0.334	0.677	***
Some university	0.623	0.095	6.55	0	0.436	0.809	***
University completed	0.55	0.09	6.10	0	0.374	0.727	***
Post-graduate	0.514	0.191	2.68	0.007	0.139	0.889	***
Refused	0.158	0.326	0.49	0.627	- 0.481	0.797	
Don't know	- 0.079	0.292	- 0.27	0.786	- 0.651	0.493	
Q95a. Occupation							
Student	- 0.129	0.07	- 1.82	0.068	- 0.267	0.01	*
Housewife/ hom	- 0.084	0.069	- 1.22	0.223	- 0.218	0.051	
Agriculture/farm	- 0.071	0.059	- 1.19	0.232	- 0.187	0.045	
Trader/ hawker	0.067	0.067	1.00	0.318	- 0.064	0.198	
Retail/ Shop	- 0.234	0.095	- 2.45	0.014	- 0.42	- 0.047	**
Unskilled manual	- 0.081	0.072	- 1.12	0.261	- 0.222	0.06	
Artisan or skilled	- 0.105	0.074	- 1.41	0.159	- 0.25	0.041	
Clerical or secret	- 0.043	0.146	- 0.29	0.769	- 0.329	0.243	
Supervisor/ Forem	- 0.234	0.164	- 1.43	0.153	- 0.554	0.087	
Security services	0.216	0.133	1.63	0.104	- 0.044	0.476	
Mid-level profess	0.099	0.089	1.12	0.264	- 0.075	0.273	
Upper-level profess	0.09	0.138	0.65	0.513	- 0.18	0.36	
Other	- 0.044	0.081	- 0.55	0.584	- 0.203	0.114	
Refused	- 0.223	0.29	- 0.77	0.442	- 0.792	0.345	
Don't know	- 0.021	0.37	- 0.06	0.954	- 0.747	0.705	
Constant	- 0.162	0.106	- 1.53	0.125	- 0.369	0.045	
Mean-dependent var	0.799	SD-dependent var	0.401				
Pseudo-R-squared	0.090	Number of obs	39,345				
Chi-square	2544.114	Prob > $\chi^2$	0.000				
Akaike crit. (AIC)	36,119.782	Bayesian crit. (BIC)	36,677.490				

Source authors' calculation based on Afrobarometer round 7 (2018) data

\*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$



**Supplementary Information** The online version of this article <https://doi.org/10.1057/s41287-024-00631-2>.

**Acknowledgements** Acknowledgement of [https://urldefense.com/v3/\\_\\_https://research.tuni.fi/uploads/2022/06/0b4c9a4d-the-social-contract-in-sub-saharan-african-countries.pdf\\_\\_;!!NLFgQxOfFo8MMQ!smo96CyUdW4t-wUBdD5Zd5y5Gf5PnS\\_TXbPDTogyswImfuF2eixBVnQI4wGkOxX0dH2nX3RL7SGcGbi3mSc\\$](https://urldefense.com/v3/__https://research.tuni.fi/uploads/2022/06/0b4c9a4d-the-social-contract-in-sub-saharan-african-countries.pdf__;!!NLFgQxOfFo8MMQ!smo96CyUdW4t-wUBdD5Zd5y5Gf5PnS_TXbPDTogyswImfuF2eixBVnQI4wGkOxX0dH2nX3RL7SGcGbi3mSc$) and of working paper at UNU.

**Funding** Open Access funding provided by University of Helsinki (including Helsinki University Central Hospital). Funding Open Access funding provided by University of Helsinki (including Helsinki University Central Hospital).

**Data availability** The study used the datasets for round 6 and 7 of the Afrobarometer. The datasets are public available in the Afrobarometer website. World Bank data are also public available in the World Bank website. No new data were created during this study.

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