

Factors affecting tax compliance attitude in Africa: Evidence from Kenya, Tanzania, Uganda and South Africa*

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Abstract: *In this study, we explore factors that determine citizens' tax compliance attitude in Kenya, Tanzania, Uganda and South Africa. The analysis is based on attitude and perception data from the new round of Afrobarometer surveys, which contain more tax-specific information than previous rounds. Using binary logit regression, we find some similarities, but also differences in factors that are correlated with tax compliance attitude in the four countries. In Kenya and South Africa, citizens who perceive that it is difficult to avoid taxes are more likely to have tax compliant attitude than citizens who think avoidance is relatively easier. We also find evidence that individuals who are more satisfied with public service provision are more likely to have a tax compliant attitude in all the four countries. On the other hand, frequent payment to non-state actors, for instance criminal gangs, in exchange for protection, reduces individual's likelihood to have tax compliant attitude. Furthermore, in Tanzania and South Africa individuals who perceive that their ethnic group is treated unfairly by the government are less likely to have a tax compliant attitude. The degree to which respondents perceive that it is difficult to know what taxes to pay is also negatively correlated with tax compliant attitude in these two countries. Our findings are robust for different econometric specifications.*

JEL Classification: H26, K34, O23, R51

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1 Introduction

Raising more domestic revenue is a priority for most sub-Saharan African countries (Drummond *et al.* 2012). Mobilizing revenue is a way for governments to create fiscal space, provide essential public services, and reduce foreign aid and single resource dependence. However, the domestic tax bases in most African countries are undermined by widespread tax avoidance and evasion (IMF 2011; ITD 2010). In addition to limiting the amount of resources available for the government, tax evasion can also have harmful effects on economic efficiency (Chand and Moene 1999; Tanzi 2000a) and income distribution (Hindriks *et al.* 1999), implementation and outcomes of economic policies (Tanzi 2000b) and reduces government's legitimacy (Graetz *et al.* 1986). Although taxpayer non-compliance is a continual and growing global problem (McKerchar and Evans 2009), studies suggest that developing countries, many of them in Sub-Saharan Africa, are the hardest hit (Cobham 2005; Fuest and Riedel 2009).

Dealing with the problem of tax evasion requires understanding the factors underlying taxpayer's decision about whether to pay or evade taxes. However, little is known about tax compliance behavior in developing countries (Andreoni *et al.* 1998; D'Arcy 2011; Fjeldstad and Semboja 2001). This study attempts to explore factors that determine citizens' tax compliance behavior in selected African countries using attitude and perception data from a new round of Afrobarometer surveys (Round 5; 2011/12)¹. This survey includes a new series of questions about taxation that have not been included in the previous rounds of surveys. This allows for a more comprehensive empirical analysis of tax compliance in the selected African countries.

The study of determinants of tax compliance behavior in Africa is not only of academic interest. It is also important for policy makers. Attempts to broaden the tax base should build on insights into how citizens experience and perceive the tax administration and enforcement, and whether and how their tax behavior is correlated with their perceptions. More systematic and coherent information on taxpayer behavior are therefore required for better analysis and more informed tax policy design. Due to the fact that people are generally reluctant to reveal non-compliance, a challenge for studies of taxpayer behavior is lack of reliable data. However, at least theoretically, actual compliance is closely related to attitudes towards compliance (Levi *et al.* 2009; Sacks 2012). In this study, we therefore examine the factors affecting attitudes towards compliance. While this has been done in some previous studies using Afrobarometer data (Levi *et al.* 2009; Sacks 2012; D'Arcy 2011), our measure of tax compliance attitude is new in the context of cross-country studies in Africa. By empirically establishing which factors affect tax compliance attitude in the selected countries, the paper derives feasible recommendations for policy makers and revenue administrations on how to improve tax compliance behavior.

To capture tax compliance attitude of individuals, we use an indirectly phrased question in order to avoid direct implication of "wrongdoing" by the respondent. In the questionnaire, respondents were asked to state whether they think not paying taxes on income is "not wrong at all", "wrong, but understandable" or "wrong and punishable". Based on these responses,

¹ Afrobarometer measures Africans' views towards democracy, economics, and civil society with random, stratified, nationally representative samples. Because the instrument asks a standard set of questions, countries can be systematically compared. The surveys are conducted in more than a dozen African countries and are repeated on a regular cycle. The fieldwork in each country is conducted by national research institutions affiliated with the Afrobarometer project. For more on the Afrobarometer, see www.afrobarometer.org

individuals are considered as having a tax compliant attitude if their response is “wrong and punishable” and non-compliant attitude if their response is either “not wrong at all” or “wrong, but understandable”. Using a binary logit regression, we find some similarities, but also differences in factors that are correlated with tax compliance attitude in the four countries. In Kenya and South Africa, an increase in individual’s perception of the difficulty of evading taxes is found to increase the likelihood of having a tax compliant attitude. We also find evidence that individuals who are more satisfied with public service provision are more likely to have a tax compliant attitude in all the four countries. Frequent payment to non-state actors, such as criminal gangs, in exchange for protection, on the other hand, reduces individual’s likelihood of having a tax compliant attitude. Furthermore, individuals who perceive that their ethnic group is treated unfairly by the government are less likely to have a tax compliant attitude in Tanzania and South Africa. The extent to which respondents think it is difficult to know what taxes they are required to pay is also negatively correlated with tax compliant attitude in these two countries. The findings are robust for a different econometric specification, where we include all the three responses of individuals regarding other people’s action about tax in an ordered logit regression.

The remainder of the paper is structured as follows: The next section provides a brief presentation of theoretical perspectives on tax compliance. Section 3 presents the data and research design. Sections 4 and 5 present the results of the binary and alternative econometric specification, respectively. Finally, section 6 summarizes and concludes.

2 Understanding taxpayer attitudes and behavior: theoretical foundations

Models of taxpayer behavior, including the decision whether or not to pay taxes, tend to reflect one of five theories that can be referred to as: (1) economic deterrence; (2) fiscal exchange; (3) social influences; (4) comparative treatment; and (5) political accountability. These are to some extent interconnected, and some represent an evolution of others.

Economic deterrence

The economic deterrence theory states that taxpayer behavior is influenced by factors determining the benefits and cost of evasion, such as the tax rate the probability of detection and penalties for fraud (Allingham and Sandmo 1972).² This implies that if detection is likely and penalties are severe, few people will evade taxes. In contrast, under low audit probabilities and low penalties, the expected return to evasion is high. The model then predicts substantial noncompliance. Although the model has been criticized for focusing exclusively on the coercive, at the expense of the consensual, side of compliance (Sandmo 2005)³, there is some evidence to support the relevance of deterrence strategies to addressing non-compliance (McKerchar and Evans 2009). For example, the fear of getting caught, or the probability of detection, has in some contexts been found to be an effective strategy to induce truthful behavior. The theoretical principles of economic deterrence have also been widely adopted by tax administrations when developing enforcement strategies that rely principally on penalties and the fear of getting

² Nearly all economic approaches to tax evasion are based on this economics-of-crime framework (Becker 1968). Cowell (1990) offers an insightful review of this analytical framework.

³ For instance, empirical data from Western countries reveal that taxpayers pay much more tax than what could be accounted for even by the highest feasible levels of auditing, penalties and risk-aversion. The question therefore has switched from “why do people not evade taxes” to “why do people pay?” (Alm *et al* 1992).

caught. According to the economic deterrence theory, we expect individuals who perceive tax evasion as difficult to be more likely to have a tax compliant attitude.

Fiscal exchange

The fiscal exchange theory suggests that the presence of government expenditures may motivate compliance and that governments can increase compliance by providing goods that citizens demand in a more efficient and accessible manner (Cowell and Gordon 1988; Levi 1988; Tilly 1992; Moore 2004; 1998). Alm *et al.* (1992) note that compliance increases with (perceptions of) the availability of public goods and services. Accordingly, the main concern of taxpayers is what they get directly in return for their tax payments in the form of public services (*quid pro quo*). In this perspective, taxation and the provision of public goods and services are interpreted as a contractual relationship between taxpayers and the government (Moore 2004). Individuals may pay taxes because they value the goods provided by the government, recognizing that their payments are necessary both to help finance the goods and services and to get others to contribute (Fjeldstad and Semboja 2001). The existence of positive benefits may increase the probability that taxpayers will comply voluntarily, without direct coercion (Bodea and LeBas 2013). Although most taxpayers cannot assess the exact value of what they receive in return for taxes paid, it can be argued that they have general impressions and attitudes concerning their own and others' terms of trade with the government (Richupan 1987). It is then reasonable to assume that a taxpayer's behavior is affected by his/her satisfaction or lack of satisfaction with his/her terms of trade with the government. Thus, if the system of taxes is perceived to be unjust, tax evasion may, at least partly, be considered as an attempt by the taxpayer to adjust his terms of trade with the government. The fiscal exchange theory has received much attention and is well established theoretically. Empirical evidence to support the theory is, however, ambiguous (D'Arcy 2011: 5-6). Within the fiscal exchange framework, the probability of having a tax compliant attitude is positively related to satisfaction with the provision of public goods and services.

Non-state actors as service providers

The fiscal exchange theory focuses on the relations between public provision of goods and services and taxpayer compliance. What happens when non-state actors mediate this relationship? Non-state actors such as powerful people or groups other than the government may provide basic infrastructure to citizens when governments become weak and fragile (Sacks 2012). This in turn may affect the tax compliant attitude of individuals, especially if individuals are making payments to non-state actors in exchange for protecting them, their business and property. The role of non-state actors like donors and NGO's in providing basic infrastructure and how that in turn affects tax attitudes is explored in previous research (Fjeldstad 2001; Sacks 2012). However, the provision of public services by criminal organizations and gangs and its relation to tax compliance attitude has, to our knowledge, not been studied.⁴ Our primary hypothesis is that citizens' payment to non-state actors such as criminals for protection reduces their likelihood of having a tax compliant attitude.

⁴ There is a large literature on how 'protection' or 'security' money can be extorted in the classical, well-known mafia style, where organised criminals use insecurity, harassment and intimidation to extort money from individual citizens, private businesses and public officials (Gambetta, 1993; Grossman, 1995). However, this literature does not address how these practises may impact on tax compliance.

Social influences

In the social influence model, compliance behavior and attitudes towards the tax system is thought to be affected by the behavior and social norms of an individual's reference group (Snaveley 1990). It is reasonable to assume that human behavior in the area of taxation is influenced by social interactions much in the same way as other forms of behavior (ibid). Compliance behavior and attitudes towards the tax system may therefore be affected by the behavior of an individual's reference group such as relatives, neighbors and friends. Therefore, if a taxpayer knows many people in groups important to him who evade taxes, his/her commitment to comply will be weaker. On the other hand, social relationships may also help deter individuals from engaging in evasion in fear of the social sanctions imposed once discovered and revealed publicly. Theoretical research on herd behavior in economic situations (Banerjee 1992; Sah 1991) also indicates that social influences may affect compliance, in particular by affecting the perceived probability of detection. One of the most consistent findings about taxpayer attitudes and behavior in Western countries is that those who report compliance believe that their peers and friends (and taxpayers in general) comply, whereas those who report cheating believe that others cheat (Yankelovich *et al.* 1984). Evidence suggests that perceptions about the honesty of others may affect compliance behavior. In line with the social influence theory, we would expect to find that individuals who perceive other people to be compliant to have a tax compliant attitude.

Comparative treatment

The comparative treatment model is based on equity theory and posits that addressing inequities in the exchange relationship between government and taxpayers would result in improved compliance (McKerchar and Evans 2009). Citizens may not consider their relationship with the state in a vacuum where both parties are the only actors. Likewise, they may not think about their fellow citizens without considering their own relationship with the state. They may also consider how the state treats them relative to their fellow citizens. This judgment is likely to affect not only their judgment of the state, but also how they view their fellow citizens (D'Arcy 2011: 7). If the state treats certain groups preferentially, this may color the citizen's relationship with the state and the group receiving favors. A crucial variable is then not just what a person gets from the state, but what the person gets from the state (and how the state treats the person) relative to those who are in the person's wider national community. Within the comparative treatment theory, we posit that individuals who perceive that they, and their group (could be defined by wealth, education, age, religion, ethnicity, etc.), are fairly treated by the government are more likely to have a tax compliant attitude.

Political legitimacy

Finally, according to the political legitimacy theory, tax compliance is influenced by the extent to which citizens trust their government (Tayler 2006; Kirchler *et al.* 2008; Fauvelle-Aymar 1999). Legitimacy could be described as belief or trust in the authorities, institutions, and social arrangements to be appropriate, just and work for the common good. Political scientists have addressed how political legitimacy and civic identification are fostered. Persson (2008), for instance, argues that African countries that upon independence emphasized building national over ethnic identity have been more successful than those who allowed ethnicity to become the main animus of politics. Based on this argument, we expect to find a higher likelihood of a tax compliant attitude among individuals who trust the tax authorities than among those who do not.

In the following empirical analysis we will examine the extent to which the different theories of taxpayer compliance contribute to explaining people's attitude towards taxation in the selected African countries.

3 Data and descriptive analysis

The main source of data for the analysis is the 5th round of Afrobarometer survey fielded in 2011-2012. The survey collects data on public attitudes on democracy, governance, markets, taxation and civil society in more than 20 African countries.⁵ The questionnaire also includes a series of questions about tax, derived from the theories outlined in the previous section. Most of these questions are new and not included in the previous rounds of Afrobarometer. Because the questionnaires are similar across countries, the data allows a comprehensive empirical analysis of taxation theory in African societies and for testing the relevance of the various theories about taxpayer compliance. Nationally representative samples of individuals who are more than 18 years old are selected both in rural and urban areas of the different countries. 2399 randomly selected individuals were interviewed from 8 and 9 districts in Kenya and South Africa, respectively. In Tanzania and Uganda, the sample size is 2400 in each country and the respective number of districts is 26 and 5.

Kenya, Tanzania and Uganda were chosen for this study because they are situated in the same geographic region and are all members of the East African Community (EAC).⁶ Looking at similarities and disparities in attitudes towards taxation in these three countries could provide useful information about where they can make a collective effort to improve tax compliance and where country specific policies are needed. South Africa makes an interesting comparison because it has a more developed and extensive tax system, as well as significantly higher GNI per capita, than the East-African countries (see Table 1). As depicted in Table 1, there are also institutional and structural differences between the four countries. Though South Africa is rated as the richest and most democratic country, it is also the most income unequal. Kenya has the second highest GNI per capita, but scores second worst in terms of democracy and inequality, while Tanzania is the second most democratic and has the lowest inequality. Uganda has the lowest GNI per capita, scores second best on inequality and second worst on the democracy index.

[Table 1 here]

With tax revenues accounting for 29% of GDP, South Africa has the highest tax to GDP ratio of the four countries. Since the abolishment of apartheid in 1994, the country has gone through major tax reforms (OECD-DAC 2012). The ratio of tax to GDP rose from 25% in 2004 to 29% in 2010. Although tax avoidance and evasion are still considered to be major challenges, the implementation of popular taxpayer outreach and education programs by the South African

⁵ The authors' of this paper have at present only access to the datasets for a limited number of countries.

⁶ We do not have access to data from the two other members of EAC, Burundi and Rwanda.

Revenue Service (SARS), combined with new enforcement techniques, have led to improvements in public attitudes to the importance of paying taxes (OECD-DAC 2012: 31; SARS 2011).

Kenya has the second largest share of collected tax revenues with 19.5% of GDP. Although this is relatively high compared to many other African countries (World Bank 2012), the tax burden is unevenly distributed among Kenyan citizens, leaving a large fraction of the economy untaxed (Waris *et al.* 2009).

Large efforts to improve taxpayer compliance have been made by Tanzania Revenue Authority in recent years. Despite this, the country comes third with a tax to GDP-ratio of 14% in 2010. Tax evasion is a major challenge and coarse estimates suggest that loss in tax revenue due to tax evasion amounted to one sixth of the entire Tanzanian budget in the fiscal year 2009/10. As a result, the country remains heavily dependent on aid which, according to the African Development Bank, accounts for about 34% of the government's budget (AfDB 2010a).

With 12% of GDP accruing from tax revenue, Uganda has the lowest tax to GDP-ratio of the studied countries. While the tax share is almost doubled from 1991/92 when the ratio was only 6.7%, the growth in tax revenue collection has been slow the last decade (AfDB 2010b).

3.1 Measuring tax compliance attitude

In the questionnaire, respondents were asked directly if they have refused to pay taxes or fees that they owed to the government during the last year. However, studies show that individuals tend to answer untruthfully when asked questions about sensitive issues such as their own tax payment. Tax compliance is therefore likely to be over-reported in survey data using such measures. While some authors argue that obtaining reliable quantitative information about tax compliance behavior is practically impossible, others (Kaufmann (1997) and Reinikka and Svensson (2006)) maintain that application of appropriate survey methods and interview techniques comes a long way in solving the problem.

Following the works of Reinikka and Svensson (2006) on their work on corruption, we use an indirectly phrased question to capture tax compliance attitude in order to avoid direct implication of "wrongdoing" by the respondent. In the questionnaire, respondents were asked to state whether they think it is "not wrong at all", "wrong, but understandable" or "wrong and punishable" for people not to pay taxes on their income. Based on these responses, individuals are considered as having a tax compliant attitude if their response is "wrong and punishable" and non-compliant attitude if their response is either "not wrong at all" or "wrong but understandable".

Because this question has not previously been included in the survey, earlier studies of tax compliance based on Afrobarometer data have used answers to the question whether "the tax administration always have the right to make people pay taxes or not" as dependent variable (D'Arcy 2011; Levi *et al.* 2009; Sacks 2012). However, as Daude *et al.* (2012) point out, this measure focus attention to *enforcement* and has the drawback that it could be affected by the respondents' perception of the tax administration itself.

While our tax compliance attitude is new in the context of cross-country studies in Africa, similar measures have been applied in studies in other geographic regions. Among these are Hug and

Spörri (2011) who examine tax attitudes in European countries in transition from Communist rule to democracy, Torgler who has analyzed tax attitudes in several Asian (2004) and Latin American (2005) countries, and Daude and Melguizo (2010) who investigate tax attitudes in the context of Latin America. These studies all use answers to the question “Can cheating on taxes if you have a chance be justifiable?” collected by *World Values Survey* and *Lationbarometer*, respectively.

Figure 1 shows the share of respondents with tax compliant attitudes against the natural logarithm of GNI per capita⁷ in the four countries together with Benin, Ghana, Malawi and Zimbabwe. The figure depicts that there is positive correlation between GNI per capita and share of individuals with tax-compliant attitude, with relatively richer countries having a higher share. Figure 2 is equivalent to figure 1, but without the outlier, South Africa, which has a much higher GNI per capita than the other countries.

[Figure 1 here]

[Figure 2 here]

Table 2 further shows the share of respondents with compliant and non-compliant attitudes across different socioeconomic dimensions. The first row shows the share of respondents with a compliant and non-compliant tax attitude in the countries of investigation. In both South Africa and Kenya, more than 50% of the respondents have a tax compliant attitude. In Tanzania and Uganda, on the other hand, the majority have a non-compliant attitude. Almost 55% of the respondents in Tanzania, and as many as 68% of the Ugandans think that not paying taxes is “not wrong at all” or “wrong, but understandable”.

[Table2 here]

Gender, employment statuses and urban location are measured in percentages, age is measured in mean years and level of schooling is measured by a range variable where 0= “no formal schooling” and 9= “postgraduate qualifications”. Finally, wealth is measured by a composite variable consisting of ownership of radio, TV, car, water, latrine and roof material (0=respondent has none of the items, 1=respondent has all items). The only finding consistent in all four countries is the tendency towards a higher mean level of schooling among respondents with a tax compliant attitude. In all countries except Uganda, we also find that respondents with a tax compliant attitude are older, relatively wealthier and to a larger degree live in urban areas than individuals with a non-compliant attitude.

In the questionnaire, respondents are also asked what they think is the main reason that some people evade taxes. As can be seen in Table 3, in all the four countries, “taxes are too high” and “taxes are unaffordable” are the most frequently stated reasons, the former ranging from 22% in South Africa to 28% in Uganda and the latter from 25% in Tanzania to 29% in Uganda. This indicates that tax rates are perceived as too high both in terms of what respondents can afford

⁷ GNI per capita figures are taken from *World Development Indicators 2012* (World Bank 2012).

and in terms of what is reasonable. Another frequently mentioned reason is “poor public services” and in Tanzania as many as 16% of the respondents consider poor public services to be the main reason why some people evade taxes. The corresponding percentages are 12%, 11% and 9% in South Africa, Uganda and Kenya, respectively. “Unfair tax system” and “government waste/steal taxes” are also given as main reasons why people avoid taxes by more than 8% of the respondents in all the countries. Very few respondents, 1% in South Africa and Uganda and 2% in Kenya and Tanzania, state “people know they won’t get caught”.

[Table 3 here]

4 Correlates of factors affecting tax compliance attitude: regression model and variables

In this section, we look at factors that are correlated with tax compliance attitude in Kenya, Tanzania, Uganda and South Africa. More specifically, we examine the extent to which the different theories of taxpayer compliance outlined in section 2 contribute to explaining people’s attitude towards taxation.

In order to capture factors that correlate with tax compliance attitude, we estimate the following logit model.

$$\text{Probability}(\text{Tax_compliance_attitude}_i) = \alpha_1 + \alpha_2 X_1 + \alpha_3 Y_1 + \alpha_4 Z_1 + \varepsilon_i \quad (1)$$

$\text{Tax_compliance_attitude}_i$ is the dependent variable, and is a dummy taking a value of 1 for tax-compliant attitude and a value of 0 for non-compliant attitude as described in section 3 above. X_1 is a vector for individual level characteristics; age, sex, education, employment status, wealth, ethnicity⁸ of the respondent and whether the individual is urban/rural resident; Y_1 is a vector for variables that capture different factors affecting tax compliance attitude; Z_1 is a vector for variables capturing regional fixed effects. The α_i ’s are the respective coefficients and ε_i is the error term. The variables used to examine the different theories of tax compliance are described below.

Economic deterrence

As a measure of economic deterrence, we use a rank variable based on individuals’ responses to the question “Based on your experience, how easy or difficult is it to avoid paying the income or property taxes that you owe to the government?”. The variable ranges from 1=“very easy” to 4=“very difficult”.

Fiscal exchange

A handful of variables are included in the regression to capture the respondents’ satisfaction with the government’s provision of different goods and services that citizens demand and that may motivate compliance attitude. These include satisfaction with i) government’s provision of basic health services and ability to address educational needs; ii) infrastructure (government provision of water and sanitation services, maintaining roads and bridges, and provision of reliable supply of electricity); and iii) government’s handling of crime, conflict and corruption. In

⁸ We control for the 3-4 largest ethnic groups, as well as the ethnicity of the head of state, in each country

addition to these variables, we also control for overall satisfaction with ease of getting basic services from the government such as issuing identity card, household services and police services. These variables all range from 1="very badly" to 4="very well".

Non-state actors as service providers

We include a variable that captures tax to non-state actors, particularly to criminal organizations and gangs. The variable is measured by how often individuals make a payment to powerful people or groups other than the government, such as criminals or gangs in their community in return for protecting them, their property or their businesses. The variable ranges from 1= "never made payment"; 2= "only once"; 3= "a few times; and 4= "often".

Political legitimacy

We use a range of variables to capture political legitimacy such as trust in tax officials, corruption of tax officials, overall level of satisfaction with politicians, and individual's perception about their country's level of democracy. Trust in tax officials is measured as a rank response for the extent of trust that individuals have in tax officials. The variable ranges from 1= "no trust at all" to 5= "trust a lot". Corruption is captured by individuals' response to how many tax officials they think are involved in corruption. The variable ranges from 1= "none of them" to 5= "all of them". Overall satisfaction with politicians is captured as a rank response on individual's opinion whether they approve or disapprove of the way the president, member of parliaments, the premium of the provinces and elected local officials performed their job in the past 12 months. The responses range from 1= "strongly disapprove" to 4= "strongly approve". Based on these responses, factor analysis is made in order to have an indicator for individual's satisfaction with politicians. Democracy is captured as a rank response on individual's opinion on how much of a democracy their country is. The response ranges from 1= "no democracy" to 5= "a full democracy".

Social influence

To measure the influence of other people's behavior on tax compliance attitude, we use a dummy that has a value of 1 if individuals think that other people avoid taxes and 0 otherwise.

Comparative treatment

In order to capture inequities in the exchange relationship between government and taxpayers, we use a variable measured as a rank response on how often individuals perceive that their own ethnic group is treated unfairly by the government. The variable ranges from 1= "never" to 4= "always".

Knowledge about taxes

In addition to the above stated factors, the knowledge base of individuals regarding the types of taxes to pay may also matter in affecting compliance attitude. We therefore control for tax knowledge, which is measured as a rank response for the extent of difficulty to know the type of taxes to pay. The response ranges from 1=very easy to 4=very difficult. Additionally, a dummy variable for requirement to pay value added tax is included.⁹ The variable is constructed from answers to the question "Regardless of whether you are able to pay, are you required to pay

⁹ The questionnaire also contains questions on requirement to pay licence fees, property and income taxes. However, more than 50% of the responses to the questions about income tax were "not applicable" or missing. We therefore chose not to include the variable.

value added tax on the foods and the goods that you buy from shops or traders?”, and takes the value of 1 for the respondents who state they are required to pay and 0 for those who state they are not. Since the use of value added tax is widespread and most people are required to pay it in all the four countries, this variable also captures an aspect of the respondent’s knowledge about taxes. The variable might also be interpreted as an indicator of comparative treatment; if I know that I have to pay value added tax, I would think it is wrong for other people not to pay it.

4.1 Results

Results in table 4 show the marginal effects of the logit regression for the four countries. The standard errors are presented in brackets and are clustered at the district level. Table 5 further shows the Wald-test for the fit of the logit model of the four countries. As can be seen in table 5, the null hypothesis that all the regressing coefficients are jointly zero is rejected at 1% level of significance. This implies that the variables included in the regression create a statistically significant improvement in the fit of the model for all the countries.

[Table 4 here]

Although there are some similarities in factors that are correlated with tax compliant attitude across the four countries, there are also differences. While employed people in Uganda are 7% more likely to have tax compliant attitude, we find the opposite effect in Kenya by almost the same percent. More years of schooling is found to increase the probability of having a tax compliant attitude by about 3% both in Kenya and Tanzania. We do not find significant variation in tax compliant attitude between male and female with increased age or wealth of individuals in any of the four countries.

An increase in the perception of individuals about the difficulty of evading taxes of one unit increases the likelihood of tax compliant attitude by 5% and 8% in Kenya and South Africa, respectively. This gives suggestive evidence for the economic deterrence theory, which posits that the perception of increased enforcement, which makes evasion more difficult, will increase tax compliant attitude at least in Kenya and South Africa.

[Table 5 here]

In Kenya, individuals who are more satisfied with government provision of infrastructure, such as roads and electricity, are 10% more likely to have tax compliant attitude than those who are one unit less satisfied. In Uganda and Tanzania, individuals who are more satisfied with the government’s provision of basic health services and educational needs are more likely to have compliant attitude by 8% and 10%, respectively. In addition to basic health services and education, satisfaction with government’s handling of crime, conflict and corruption increases the likelihood of having a compliant attitude in Uganda with 7%. In South Africa, individuals who are more satisfied with the ease of getting various services from the government, such as issuing of identity card and obtaining household and police services, are more likely to have a tax-compliant attitude by about 8%. The different results from the four countries suggest that government expenditures may motivate compliance and that governments can increase compliance by providing goods that citizens demand in a more efficient and accessible manner (Cowell and Gordon 1988; Levi 1988; Tilly 1992; Moore 2004).

Frequent payments to non-state actors, such as criminals and gangs, reduce the likelihood of having a tax compliant attitude in all the four countries. The effect ranges from a decline in compliant attitude of 6% in Kenya, to 8% in Uganda and South Africa and as high as 12% in Tanzania.

We do not find strong evidence on political legitimacy except for a few variables in South Africa and Tanzania. Corruption of tax officials is found to reduce the likelihood of tax compliant attitude by 5% in South Africa. In Tanzania, increased level of satisfaction with the overall performance of politicians is found to increase the likelihood of tax compliant attitude by 3%.

The extent to which individuals think that their own ethnic group is treated unfairly is also significantly correlated with compliant attitude in Tanzania and South Africa. As the extent to which individuals think that their own ethnic group is treated unfairly increases by one point, the probability of having a tax compliant attitude decreases by 5% and 4% in Tanzania and South Africa, respectively. This may provide indication towards the comparative treatment model, which is based on equity theory and posits that addressing inequities in the exchange relationship between government and taxpayers matters for tax compliance (Persson 2008; Rothstein and Teorell 2008).

Tax knowledge is significantly correlated with tax compliant attitude in Tanzania and South Africa. An increase in the perceived difficulty to find out what type of taxes to pay by one point reduces the probability of tax compliance attitude by 4% and 10% in Tanzania and South Africa respectively. This is equivalent to reducing the current share of people with tax compliant attitude, which is 54% in Tanzania and 57% in South Africa, to close to 51% in both countries due to lack of appropriate tax knowledge.

In all four countries the dummy for perceived requirement to pay value added tax has a large and statistically significant effect on tax compliance attitude. Among Tanzanian and Ugandan respondents, those who state that they are required to pay value added tax are 17% more likely to have a tax complaint attitude than respondents who perceive that they are not required to pay this tax. The corresponding percentage is 19% and 30% for South Africa and Kenya, respectively.

5 Robustness check

In our previous measure of tax compliance attitude, we use a dummy variable where we categorize individuals who responded that not paying tax is “not wrong” and “wrong, but understandable” as having a non-compliant attitude. However, it could also be the case that individuals who responded that not paying tax is “wrong and understandable” have a compliant attitude. In this section we conduct a robustness check where we include all the three responses, “not wrong at all”, “wrong, but understandable” and “wrong and punishable”, in a regression. Given the ordinal nature of the responses, we use ordered logit model.

We re-formulate the econometric model in equation (1) as follows. The dependent variable ($Tax_compliance_attitude_i$) in equation (2) is an ordered categorical variable which ranges from 1 to 3 (1=not wrong at all, 2=wrong but understandable, and 3=wrong and punishable). We assume that there is a latent variable $Tax_compliance_attitude_i^*$ given by the following expression;

$$Tax_compliance_attitude_i^* = \alpha_1 + \alpha_2 X_1 + \alpha_3 Y_1 + \alpha_4 Z_1 + \varepsilon_i \quad (2)$$

Assuming that ε_i is a random, normally distributed, variable, the link between the observed and the latent variable is given by;

$$P(Tax_{compl}_i = 1|V_i) = \Phi(\mu_1 - V_i\gamma)$$

$$P(Tax_{compl}_i = 2|V_i) = \Phi(\mu_2 - V_i\gamma) - \Phi(\mu_1 - V_i\gamma)$$

$$P(Tax_{compl}_i = 3|V_i) = 1 - \Phi(\mu_2 - V_i\gamma),$$

where Φ is a cumulative normal distribution function of ε_i , $\gamma = [\alpha_1, \alpha_2, \alpha_3, \alpha_4]$ are the coefficients of the explanatory variables in equation 2, and μ_1 and μ_2 are the unknown threshold parameters that differentiate the categories. The model is estimated by maximum likelihood for each country.

5.1 Results

Table 6 shows the marginal effects of the ordered logit regression for the three responses in the four countries. Most of our results are consistent with the findings of the binary logit regression presented in table 5. However, we find even stronger evidence for the economic deterrence theory for all the four countries in the regression. An increase in the perception of the difficulty of evading taxes by one point increases the likelihood of responding “wrong and punishable” by 4% in Kenya, 5% in Uganda, 6% in Tanzania and 7% in South Africa. On the other hand, an increase in difficulty of evasion reduces the likelihood of responding “wrong, but understandable” and “not wrong at all” in all the four countries.

Similar to findings in the logit regression, in Tanzania and Uganda individuals who are more satisfied with the government’s provision of basic health services and addressing educational needs are more likely to respond “wrong not to pay taxes”, and are also less likely to respond “wrong but understandable” and “not wrong at all”. In Uganda, satisfaction with government’s handling of crime, conflict and corruption is more likely to make individuals respond “wrong not to pay taxes”, and less likely to respond “wrong but understandable” and “not wrong at all”. Again, similar to the findings of the logit regression, respondents who are more satisfied with government handling of infrastructure such as roads and electricity are more likely to respond “wrong and punishable” and less likely to respond “wrong and understandable” and “not wrong at all” in Kenya. In South Africa, satisfaction with government provision of basic services such as issuing identity card, household services and police services make people more likely to respond “wrong and punishable” and less likely to respond “wrong, but understandable” and “not wrong at all”.

[Table 6 here]

Results are also consistent with the logit model in terms of the effect of non-state actors. Individuals who make frequent payment to non-state actors such as criminals and gangs are less likely to respond “wrong and punishable” and more likely to respond “wrong, but understandable” and “not wrong at all”.

In the ordered logit regression, we do not find much evidence on political legitimacy except for corruption in South Africa, which depicts similar results as in the logit regression. Individuals who think that tax officials are corrupt are less likely to respond “wrong and punishable” and more likely to respond “wrong, but understandable” and “not wrong at all”.

Knowledge about tax is still important and an increase in the extent of difficulty to know the type of taxes to pay reduces the likelihood of individuals to respond “wrong and punishable” and increases the likelihood to respond “wrong, but understandable” and “not wrong at all” in South Africa, Kenya and Tanzania, although the latter is significant only at 10%.

Requirement to pay value added also has, as in the binary logit model, a large and statistically significant effect. In all countries, those who perceive that they are required to pay value added tax are between 19% (Tanzania) and 29% (South Africa) more likely to respond “wrong and punishable” and less likely to respond “wrong, but understandable” and “not wrong at all” than those who say they are not required to pay this tax.

6 Conclusion

In this paper, we explore factors that determine citizens’ tax compliance attitude in Kenya, Tanzania, Uganda and South Africa using attitude and perception data from the new round 5 of Afrobarometer surveys. The survey includes a series of theoretically rooted questions about citizens’ views about taxation. A main challenge was to find an accurate proxy for taxpayer compliance since the individual’s reporting of own compliance is likely to be over-reported. We use an indirectly phrased question on the respondent’s opinion about other people’s tax compliance, a measure similar to the one used in studies of tax attitudes in other geographic regions.

Results from the logit regression provide robust results for several determinants of tax compliance. We find that respondents in South Africa and Kenya are more likely to express tax compliant attitude if they perceive that enforcement makes evasion more difficult. This is in line with the prescription of the standard economic theory of deterrence. The analysis also find evidence that those who are more satisfied with public service provision are more likely to support the government’s right to tax in all the four countries, supporting certain elements of the fiscal exchange theory. However, the link between tax compliance attitude and public service provision depends on the specific service in question and differs between countries. While access to infrastructure such as roads and electricity encourage tax compliant attitude in Kenya, respondents in Tanzania and Uganda refer to education and health services as key to their tax compliance. In South Africa, government’s provision of services such as issuing identity cards and police services are more likely to support tax compliant attitude. This finding is in line with expectations within the comparative treatment framework. Payment to non-state actors, such as criminal gangs, in return for protection, also reduces the likelihood of having a tax compliant attitude significantly in all the four countries. Finally, we find indications that tax knowledge and awareness have a significant impact on tax compliance attitude. In South Africa and Tanzania, respondents who perceive it as difficult to find out what taxes they are required to pay are less likely to have a tax compliant attitude than those who perceive it as relatively easier. Furthermore, of all the variables in the analysis, the perceived requirement to pay value added tax (which could be interpreted as an indicator of tax awareness) has the largest estimated impact on tax compliance attitude

Previous research suggests that the way the state treats individuals or groups relative to their fellow citizens is an important factor in determining taxpayer compliance attitude (D'Arcy 2011). We have tested this hypothesis by examining how citizens' perceive their ethnic group is treated by the government compared to other groups. Only in South Africa and Tanzania this seems to matter for tax compliant attitude. The study finds no strong evidence that political legitimacy, e.g. trust in government policy and institutions, impacts on taxpayers' compliance attitude. These findings are robust for a different econometric estimation, where we include all the responses of individuals regarding other people's action about tax in an ordered logit regression.

The study provides us with some directions for further research. For an improved understanding of tax compliance attitude and behavior in Africa, there is a need for a more thorough examination of the concept of fiscal exchange, i.e., the contractual relationship between taxpayers and the government. Poor service delivery may, in taxpayers' view, legitimize tax evasion and avoidance. In this context it is relevant to analyze if – and when – earmarking of specific tax revenues to specific expenditures is required to enhance (Bird 1997; Bird and Jun 2005). In this perspective, it is also important to examine how payment to non-state actors for the provision of services and infrastructure may impact on peoples' tax compliance attitude, whether these services are in the form of private schools and/or health services, community self-help projects and/or 'protection' by criminal organizations (Sacks 2012). Critical factors in this respect are citizens' perceptions about the role of the state, how the tax law is administrated, perceptions about enforcement, and government trustworthiness (Baskaran and Bigsten 2012). Furthermore, there is a need for research focusing on fairness in tax collection and comparative treatment of taxpayers. Can, and under what conditions, compliance be established in African countries without an extensive and costly enforcement apparatus? This question is important because it is likely that governments, seeking power on the basis of popular consent, face restrictions in their use of coercion in tax collection. Thus, the challenge for taxation in Africa is to raise domestic revenues from consenting citizens.

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Tables

Table 1: Macroeconomic indicators

Indicator ¹⁰	South Africa	Kenya	Tanzania	Uganda	SSA
Population (million)	50	41	45	33	840
GNI per capita (current USD)	6 090	790	530	500	1 127
Tax revenue of GDP (%)	29	19.5	14	12	18 ¹¹
Urban population (% of total)	62	22	26	13	37
Gini index	0.63	0.48	0.38	0.44	...
Democracy index ¹² , 2011	7.8	4.7	5.6	5.1	4.3

Table 2: Differences in background variables between respondents with tax compliant and non-compliant attitude

	South Africa		Kenya		Tanzania		Uganda	
	Non-compliant attitude	Compliant attitude						
Total	43 %	57 %	46 %	54 %	54 %	47 %	68 %	32 %
Male	50 %	50 %	47 %	53 %	51 %	51 %	52 %	49 %
Employed	35 %	39 %	47 %	45 %	39 %	34 %	48 %	51 %
Self-employed	15 %	13 %	68 %	65 %	52 %	55 %	83 %	77 %
Urban	68 %	69 %	38 %	40 %	30 %	35 %	16 %	13 %
Age (mean)	37.7	40.5	35.4	36.2	38.1	39.1	35.4	34.4
Level of schooling (mean)	4.2	4.4	3.8	4.1	2.9	3.2	3.3	3.4
Wealth	0.58	0.65	0.49	0.54	0.39	0.41	0.21	0.20

Table 3: Reasons why some people evade taxes, %

	South Africa	Kenya	Tanzania	Uganda
Unfair tax system	8	8	11	11
Taxes are too high	22	23	25	28
Taxes are unaffordable	27	26	25	29

¹⁰ All numbers are from World Development Indicators 2012 (World Bank 2012) unless else is specified

¹¹ World Development Indicators 2011 (World Bank 2011)

¹² Economist Intelligence Unit (EIU) democracy index 2011, 0 = authoritarian regime and 10= full democracy (EIU 2011: 30)

Poor public services	12	9	16	11
The government waste / steal taxes	11	10	9	8
People know they won't get caught	1	2	2	1
Other	20	23	12	12
Total	100	100	100	100

Table 4: Binary logistic regressions with marginal effects

	South Africa	Kenya	Tanzania	Uganda
Individual characteristics				
Age	-0.00 (0.01)	0.00 (0.01)	0.01* (0.01)	0.00 (0.01)
Age2	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Male (d)	0.02 (0.03)	0.01 (0.03)	-0.03 (0.02)	-0.02 (0.03)
Self-employed (d)	-0.01 (0.04)	-0.01 (0.04)	-0.00 (0.03)	-0.08 (0.07)
Employed (d)	0.02 (0.04)	-0.08** (0.04)	-0.05 (0.03)	0.07** (0.04)
Schooling	0.00 (0.01)	0.03** (0.01)	0.03** (0.01)	-0.01 (0.01)
Wealth	0.07 (0.05)	0.10 (0.06)	0.03 (0.08)	0.08 (0.08)
Urban (d)	-0.02 (0.04)	-0.04 (0.04)	-0.02 (0.04)	-0.06 (0.06)
Economic deterrence				
Difficulty of evading tax	0.08*** (0.03)	0.05** (0.02)	0.04 (0.03)	0.03 (0.02)
Fiscal exchange				
Health and education	0.00 (0.03)	-0.01 (0.03)	0.10*** (0.02)	0.08*** (0.02)
Infrastructure	0.00 (0.04)	0.09*** (0.03)	-0.00 (0.03)	0.01 (0.03)
Crime, conflict and corruption	0.04 (0.04)	-0.03 (0.03)	0.01 (0.03)	0.07** (0.03)
Basic services from the government	0.08*** (0.02)	-0.03 (0.03)	-0.01 (0.03)	0.01 (0.02)
Social influence				
Perceived compliance of others	-0.05 (0.03)	0.01 (0.04)	-0.09*** (0.03)	0.02 (0.04)
Comparative treatment				
Unfair treatment of own ethnic group	-0.04* (0.02)	-0.02 (0.01)	-0.05** (0.02)	0.03 (0.03)
Political legitimacy				
Trust	0.01	0.02	-0.01	-0.01

	(0.02)	(0.02)	(0.01)	(0.01)
Corruption	-0.05***	0.02	0.00	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Satisfaction with politicians	-0.01	0.01	0.03*	0.01
	(0.02)	(0.02)	(0.02)	(0.03)
Democracy	-0.02	0.02	0.01	0.00
	(0.02)	(0.02)	(0.01)	(0.02)
<i>Non-state actors</i>				
Payments to non-state actors	-0.08**	-0.06**	-0.12***	-0.08**
	(0.04)	(0.03)	(0.04)	(0.04)
<i>Knowledge about taxes</i>				
Difficulty finding out what taxes to pay	-0.10***	-0.03	-0.04**	0.00
	(0.03)	(0.02)	(0.02)	(0.02)
Value added tax	0.19***	0.30***	0.17***	0.17***
	(0.05)	(0.05)	(0.04)	(0.04)
Region fixed effects	Yes	Yes	Yes	Yes
Ethnicity fixed effects	Yes	Yes	Yes	Yes
Religion fixed effects	Yes	Yes	Yes	Yes
Number of observations	1308	1452	1900	1410
Pseudo R2	0.12	0.13	0.12	0.10

Table 5: Wald test for binary logit regressions

	South Africa	Kenya	Tanzania	Uganda
Chi ²	578	542	610	1348
Degrees of freedom	34	33	52	31
Prob > chi ² =	0.00	0.00	0.00	0.00

Table 6 : Ordered logistic regressions with marginal effects

	South Africa			Kenya			Tanzania			Uganda		
	Wrong	Wrong, but understandable	Not wrong	Wrong	Wrong, but understandable	Not wrong	Wrong	Wrong, but understandable	Not wrong	Wrong	Wrong, but understandable	Not wrong
Individual fixed effects	Yes	Yes	Yes									
<i>Economic deterrence</i>												
Difficulty of evading tax	0.07** (0.03)	-0.06** (0.02)	-0.01** (0.00)	0.05*** (0.02)	-0.04*** (0.01)	-0.01** (0.01)	0.06*** (0.02)	-0.03*** (0.01)	-0.03*** (0.01)	0.05** (0.03)	-0.02** (0.01)	-0.03* (0.02)
<i>Fiscal exchange</i>												
Health and education	-0.01 (0.03)	0.01 (0.02)	0.00 (0.00)	0.01 (0.03)	-0.01 (0.02)	-0.00 (0.01)	0.08*** (0.02)	-0.04*** (0.01)	-0.04*** (0.01)	0.07*** (0.02)	-0.03*** (0.01)	-0.04*** (0.01)
Infrastructure	0.01 (0.04)	-0.01 (0.03)	-0.00 (0.01)	0.09*** (0.03)	-0.06*** (0.02)	-0.02*** (0.01)	-0.00 (0.03)	0.00 (0.01)	0.00 (0.01)	0.01 (0.02)	-0.01 (0.01)	-0.01 (0.01)
Crime, conflict and corruption	0.03 (0.04)	-0.02 (0.03)	-0.00 (0.01)	-0.02 (0.03)	0.01 (0.02)	0.01 (0.01)	-0.02 (0.03)	0.01 (0.01)	0.01 (0.01)	0.08** (0.03)	-0.04** (0.02)	-0.05** (0.02)
Basic services	0.08*** (0.02)	-0.07*** (0.02)	-0.01*** (0.00)	-0.04 (0.03)	0.03 (0.02)	0.01 (0.01)	0.02 (0.03)	-0.01 (0.01)	-0.01 (0.01)	-0.02 (0.02)	0.01 (0.01)	0.01 (0.01)
<i>Social influence</i>												
Compliance of others	-0.05 (0.03)	0.04 (0.03)	0.01 (0.01)	0.04 (0.04)	-0.03 (0.03)	-0.01 (0.01)	-0.08** (0.03)	0.04** (0.02)	0.04** (0.02)	0.02 (0.04)	-0.01 (0.02)	-0.01 (0.02)
<i>Comparative treatment</i>												
Own ethnic group treated unfairly	-0.06** (0.03)	0.05** (0.02)	0.01* (0.00)	-0.02 (0.01)	0.01 (0.01)	0.01 (0.00)	-0.03 (0.02)	0.01 (0.01)	0.02 (0.01)	0.03 (0.02)	-0.01 (0.01)	-0.01 (0.01)
<i>Political legitimacy</i>												
Trust	0.01 (0.02)	-0.01 (0.01)	-0.00 (0.00)	0.02 (0.01)	-0.01 (0.01)	-0.01 (0.00)	-0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01* (0.01)	0.01 (0.00)	0.01 (0.00)

Corruption	-0.04*** (0.01)	0.04*** (0.01)	0.01*** (0.00)	0.01 (0.02)	-0.00 (0.01)	-0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.02 (0.02)	0.01 (0.01)	0.01 (0.01)
Satisfaction with politicians	0.01 (0.02)	-0.01 (0.02)	-0.00 (0.00)	0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.02 (0.02)	-0.01 (0.01)	-0.01 (0.01)	0.01 (0.03)	-0.00 (0.01)	-0.00 (0.02)
Democracy	-0.02 (0.01)	0.01 (0.01)	0.00 (0.00)	0.03 (0.02)	-0.02 (0.02)	-0.01 (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)	0.01 (0.01)	0.01 (0.01)
Non-state actors												
Payments to non-state actors	-0.09*** (0.03)	0.08*** (0.02)	0.01*** (0.00)	-0.07** (0.04)	0.05* (0.03)	0.02** (0.01)	-0.12*** (0.04)	0.06*** (0.02)	0.07*** (0.02)	-0.06** (0.03)	0.02* (0.01)	0.03** (0.01)
Knowledge about taxes												
Difficulty finding out what taxes to pay	-0.11*** (0.03)	0.09*** (0.02)	0.02*** (0.00)	-0.07*** (0.02)	0.05*** (0.02)	0.02*** (0.01)	-0.03* (0.02)	0.01* (0.01)	0.02* (0.01)	-0.00 (0.02)	0.00 (0.01)	0.00 (0.01)
Value added tax	0.20*** (0.04)	-0.16*** (0.04)	-0.04*** (0.01)	0.29*** (0.05)	-0.18*** (0.03)	-0.11*** (0.03)	0.19*** (0.04)	-0.09*** (0.02)	-0.10*** (0.02)	0.20*** (0.04)	-0.10*** (0.02)	-0.10*** (0.02)
Region fixed effects	Yes	Yes	Yes	Yes								
Ethnicity fixed effects	Yes	Yes	Yes	Yes								
Religion fixed effects	Yes	Yes	Yes	Yes								
Number of observations	1308	1308	1308	1452	1452	1452	1900	1900	1900	1410	1410	1410
Pseudo R ²	0.11	0.11	0.110	0.11	0.11	0.11	0.09	0.09	0.09	0.08	0.08	0.08

Figures

Figure 1: Tax compliant attitude and GNI per capita

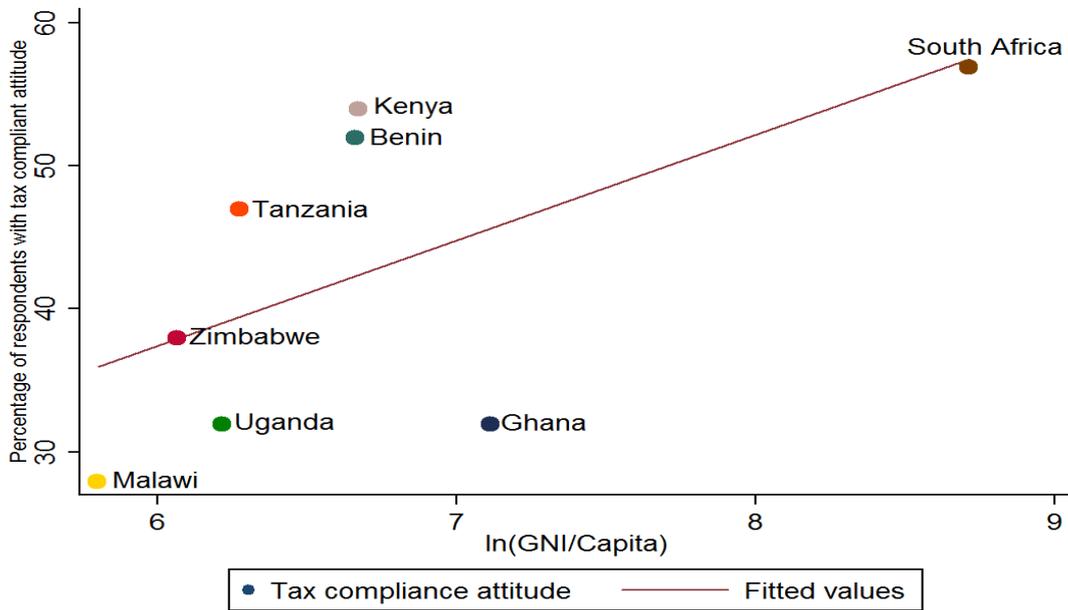
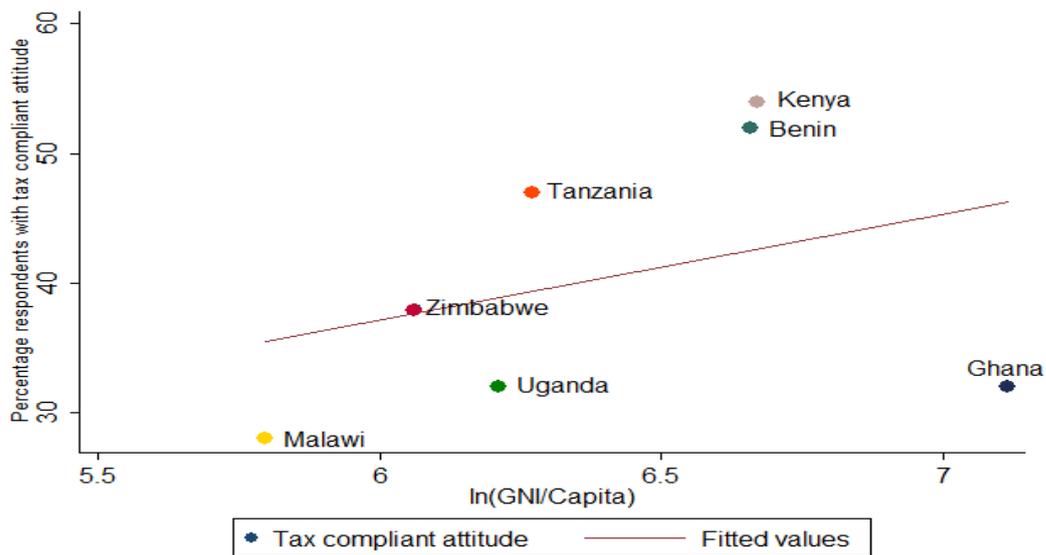


Figure 2: Tax compliant attitude and GNI per capita without South Africa



Appendix 1

Table A1: Descriptive statistics for all variables

		South Africa				Kenya				Tanzania				Uganda			
Description		Mea n	Std. Dev.	Mi n	Ma x	Mea n	Std. Dev.	Mi n	Ma x	Mea n	Std. Dev.	Mi n	Ma x	Mea n	Std. Dev.	Mi n	Ma x
<i>Dependent variable</i>																	
Tax compliant attitude	Dummy = 1 if individual think it is <i>wrong and punishable</i> not to pay taxes, 0 otherwise	0.57	0.49	0	1	0.54	0.50	0	1	0.47	0.50	0	1	0.32	0.47	0	1
<i>Individual characteristics</i>																	
Age	Age of respondent	39.2	15.9	18	95	35.8	13.5	18	93	38.6	14.3	18	99	35.2	12.8	18	84
Male	Dummy = 1 if respondent is male	0.50	0.50	0	1	0.50	0.50	0	1	0.50	0.50	0	1	0.50	0.50	0	1
Self-employment	Dummy1 = if self-employed, 0 otherwise	0.13	0.34	0	1	0.65	0.48	0	1	0.53	0.50	0	1	0.80	0.40	0	1
Employment	Dummy = 1 if employed, 0 if unemployed	0.37	0.48	0	1	0.45	0.50	0	1	0.36	0.48	0	1	0.48	0.50	0	1
Schooling	9 = postgraduate qualifications, 0 = no formal schooling,	4.27	1.56	0	9	3.91	1.81	0	9	3.01	1.39	0	9	3.28	1.86	0	9
Wealth	Index for ownership of radio, TV, car, water, latrine and roof material. 1= respondent has all items and 0 = respondent has none	0.62	0.33	0	1	0.51	0.25	0	1	0.39	0.23	0	1	0.20	0.23	0	1
Urban	Dummy = 1 if household is located in urban area	0.67	0.47	0	1	0.38	0.49	0	1	0.32	0.47	0	1	0.14	0.35	0	1
<i>Economic deterrence</i>																	
Ease of evasion	1 = very easy, 4 = very difficult	2.96	0.80	1	4	3.25	0.76	1	4	3.22	0.79	1	4	3.26	0.80	1	4
<i>Fiscal exchange</i>																	
Health and education	Factor for satisfaction with health and educational	2.73	0.79	0	4	2.69	0.79	0	4	2.38	0.82	0	4	2.58	0.72	0	4

Infrastructure	services. 4 = Very well, 1 = very badly, 0 = don't know Factor for satisfaction with water, roads, electricity and environment. 4 = Very well, 1 = very badly, 0 = don't know	2.64	0.73	0	4	2.59	0.91	0	4	2.18	0.71	0	4	1.94	0.69	0	4
Crime and conflict	Factor for satisfaction with crime, conflict, corruption and terrorism. 4 = Very well, 1 = very badly, 0 = don't know	2.14	0.78	0	4	2.11	0.74	0	4	2.33	0.70	0	4	2.16	0.73	0	4
Infrastructure	Factor for satisfaction with electricity, water, sewage, cell phone services and paved road. 4 = Very well, 1 = very badly, 0 = don't know	2.64	0.73	0	4	2.59	0.91	0	4	2.18	0.71	0	4	1.94	0.69	0	4
<i>Social influence</i>																	
Tax compliance of others	Perceived tax avoidance of others 1= <i>never</i> or <i>rarely</i> , 0 = <i>always</i> or <i>often</i>	0.61	0.49	0	1	0.72	0.45	0	1	0.70	0.46	0	1	0.75	0.43	0	1
<i>Comparative treatment</i>																	
Unfair treatment of own ethnic group	Perceived frequency of discrimination against own ethnic group. 4 = always, 1 = never	1.67	0.94	1	4	1.97	1.02	1	4	1.48	0.79	1	4	2.13	1.01	1	4
<i>Political legitimacy</i>																	
Trust	Trust in tax department. 5 = a lot, 1 = not at all	3.55	1.31	1	5	2.99	1.34	1	5	3.15	1.34	1	5	2.74	1.37	1	5
Corruption	Perceived corruption among tax officials. 5 = all, 1 = none	2.48	1.12	1	5	2.98	1.13	1	5	2.84	1.17	1	5	3.11	1.24	1	5
Satisfaction with politicians	Factor for satisfaction with president, prime minister, MP and local government. 5 = Strongly approve, 1 = strongly disapprove.	3.22	1.01	1	5	2.86	1.14	1	5	3.45	1.09	1	5	3.19	1.04	1	5

Democracy	Perception/satisfaction with democracy. 5 = full democracy/very satisfied, 1 = not a democracy/not satisfied	3.39	1.13	1	5	2.96	1.10	1	5	3.70	1.06	1	5	3.08	1.18	1	5
<i>Non-state actors</i>																	
Payments to non-state actors	Payments to powerful people/groups other than the government. 4 = Often and 1 = Never	1.18	0.57	1	4	1.24	0.68	1	4	1.17	0.50	1	4	1.25	0.62	1	4
<i>Knowledge about tax</i>																	
Ease of finding out which taxes to pay	4 = Very difficult and 1 = very easy	2.68	0.81	1	4	3.10	0.83	1	4	3.14	0.88	1	4	3.10	0.89	1	4
Required to pay VAT	Dummy = 1 if respondent is required to pay value added tax	0.76	0.43	0	1	0.73	0.44	0	1	0.42	0.49	0	1	0.39	0.49	0	1
Number of observations		2399				2399				2400				2400			