Remittance dependence, support for taxation and quality of public services in Africa

Document status and date:
Published: 30/05/2022

Document Version:
Publisher's PDF, also known as Version of record

Document license:
CC BY-NC-SA

Please check the document version of this publication:

• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](link)

Download date: 09 Apr. 2024

#2022-019

Remittance dependence, support for taxation and quality of public services in Africa

Maty Konte and Gideon Ndubuisi

Remittance Dependence, Support for Taxation and Quality of Public Services in Africa

Maty Konte[1] and **Gideon Ndubuisi[2]**

Abstract

We explore the heterogeneous effect of migrant remittances on citizens' support for taxation using a sample comprising 45,000 individuals from the Afrobarometer survey round 7 [2016-2018] across 34 African countries. To correct for unobserved heterogeneity, we endogenously identify latent classes/subtypes of individuals that share similar patterns on how their support for taxation is affected by their unobserved and observed characteristics, including remittances dependency. We apply the finite multilevel mixture of regressions approach, a supervised machine learning method to detect hidden classes in the data without a priori assumptions on class/subtype membership or how remittance dependency affects support for taxation across the classes. Our data is best generated by an econometric model with two classes/subtypes of individuals. In class 1 where more than two-thirds of the citizens in our sample belong, we do not find any significant evidence that remittance dependence affects support for taxation. However, in class 2 where the remaining one-third of the citizens belong, we find a significant negative effect of remittance dependence on support for taxation. We further examine whether citizens' valuation of the quality of public services is an important factor in determining the classification of individuals into classes. We find that citizens who have a positive appraisal of the quality of the public service delivery have a lower probability of belonging to the class/subtype in which depending on remittances reduces support for taxation.

---

[1] Barnard College, Columbia University, New York City, USA; UNU-MERIT, Maastricht University, Maastricht, The Netherlands
Emails: mk4415@columbia.edu ; mkonte@barnard.edu; konte@meit.unu.edu
[2] Deutsches Institut fur Entwicklungspolitik, Bonn, Germany; UNU-MERIT, Maastricht University, Maastricht, The Netherlands

Email: Gideon.ndubuisi@die-gdi.de

1. Introduction

Amid the steady rise in migrant remittances over the past few decades in low and middle-income countries (see Basu & Bang, 2015; World Bank, 2019), an enormous body of literature examining their potential effects on the recipient countries has emerged. Recently, scholars have begun to examine how migrant remittance, or more generally (e)migration, leads to behavioral changes of those left behind, including political and social behaviors (Chauvet & Mercier, 2014; Tyburski, 2014; Konte, 2016; Ivlevs & King, 2017; Nikolova *et al.,* 2017; Escriba-Folch *et al.* 2018; Höckel et al., 2018; Tuccio et al., 2018; Mitra et al, 2021)[3] and more recently on tax compliance behaviors (López García et al., 2022). Our paper contributes to this literature by examining the heterogeneous effect of remittance dependency on citizens' support for taxation across latent classes/subtypes of individuals and how the quality of public services may alter this relationship across the identified classes.

One of the theoretical underpinnings of the above literature is that remittances augment the resources of the left behind. This makes remittance receivers less dependent on the state's clientelistic spending, prompting them to reduce their electoral support for incumbent parties, engage more in political activities, and demand fairer elections or political accountability. However, as remittance provides a safety net, remittance recipients may have fewer economic grievances and therefore exert less pressure on the government, leading to political disengagement and lesser tax compliance. Besides this supposed income channel, migrant remittance may also cause an attitudinal change in those left behind through the so-called norm-transfer channel. Remittances underscore a closer link and communication between migrants and their loved ones that are left behind. Hence, it serves as a conduit of internalized norms transfer or spillover from migrants to their loved ones either indirectly through communication and exchange, or directly as per when migrants inveigle their loved ones back home to comply with certain norms and beliefs by withholding transfer (Levitt, 1998; Batista *et al.,* 2019; Konte & Ndubuisi, 2020).

In this paper, we examine whether behaviors related to support for taxation are among the attitude dimensions affected and shaped by remittance. We make two notable deviations from the previous

---

[3] See also Germano, 2013; Tyburski, 2012; Tuccio et al., 2019 and Batista et al., 2019 for additional studies

2

literature especially López García et al (2022) which is to our best knowledge the only study that looks at the relationship between remittances and support for taxation. The first innovation of our study is that we relax the hypothesis that all citizens behave similarly and examine the heterogeneous effect of remittance dependency on citizens' support for taxation across latent classes/subtypes of individuals. Specifically, we endogenously identify whether there exist latent classes/subtypes of individuals that share similar but unobserved patterns on how their support for taxation is affected by their observed and unobserved characteristics, including remittance dependency. As our second contribution, we then explore how a citizen's valuation of public services may determine which class/subtype an individual belongs to. In this way, we provide evidence on how a remittance recipient's valuation of public goods and services alters the relationship between remittance dependency and support for taxation. The motivation for this latter analysis draws from the psychological tax contract thesis or the over a century ago Wicksell's Voluntary exchange theory, arguing that one of the reasons individuals voluntarily comply with paying tax is because they view it as part of a social contract where they help fund the public purse and the state provides public goods and services in return (see Musgrave, 1939; Christian, 1978; Feld & Frey, 2007). In this case, the tax compliance level of such individuals would be proportional to the amount and quality of [public] goods and services that are funded by tax revenues.

We address our research objectives, by applying the finite multilevel mixture of regressions model (Muthén & Asparouhov, 2009), a semiparametric and supervised machine learning method that has also been recently adopted in other studies to endogenously identify hidden classes/subtypes of individuals that may exist in survey data (Konte, 2016; Anderson et al., 2018; Flunger et al., 2019). This approach provides greater flexibility than ad-hoc approaches that split samples based on a-priori criteria, and it also accounts for the hierarchy structure of the data. We apply this method to the Afrobarometer survey round 7 collected between 2016 and 2018, including more than 45,000 individuals across 34 African countries. Our result shows that our data is best generated by an econometric model with two classes/subtypes of individuals. In the first class, with 68% of the individuals, we find that dependence on remittance has a positive but not statistically significant effect on support for taxation. That is, remittance dependents in this class are as likely as non-remittance dependents to agree or disagree that citizens must pay taxes. In the second class with the remaining 32% of the observations, however, the results show a significant

negative effect of dependence on remittances on support for taxation. Interestingly, we find that the two classes identified do not coincide with an ad hoc grouping of the data based on individuals' valuation of the quality of public services, but that public services' quality is an important determinant of the probability of belonging to the second class. Particularly, respondents who have a positive appraisal of the quality of the public service delivery have a lower probability of belonging to the class/subtype where dependence on remittances reduces tax compliance. The results are robust to different specifications. Overall, our findings differ from López García et al (2022) which concluded a negative effect of remittances on support for taxation for all the individuals without testing for the existence of latent classes/subtypes of citizens in the data. Our results underscore a potential negative consequence of migrant remittance in the migrant home country but only for one-third of the sample while emphasizing the need for efficient public goods provisioning to counteract this adverse effect.

Our study contributes to three strands of the literature. First, it contributes to the burgeoning literature on "diaspora externalities". This literature includes the previously discussed studies examining how migrant remittance leads to institutional and social change in the migrants' countries of origin or shapes the political and social behaviors of those left behind on the one hand, and studies that have more broadly examined the effects of (e)migration along the same lines, on the other hand. Regarding the latter, Spilimbergo (2009) provides the first cross-country empirical evidence by examining the impact of foreign-trained students on the democratization of their home country. Docquier *et al.* (2016), on the other hand, show that openness to emigration has a positive effect on home-country institutional development. Detailed micro-level studies also provide evidence indicating a significant association between migration, quality of governance, political accountability, and electoral competitiveness (Batista & Vicente, 2011; Pfutze, 2012; Chauvet & Mercier, 2014; Barsbai *et al.,* 2017). Other studies have examined how migration leads to civic engagement (Nikolova et al., 2017), transfer of gender and fertility norms (Beine *et al.,* 2013; Bertoli & Marchetta, 2015; Tuccio & Wahba, 2018), and bribe payment (Ivlevs & King, 2017; Höckel *et al.,* 2018; Tuccio *et al.,* 2019; Konte & Ndubuisi, 2020).

Second, our study makes a direct contribution to the broad literature on the determinant of tax compliance. Whereas erstwhile studies in this literature argue that the decision to evade tax is

primarily driven by extrinsic, pecuniary factors (Allinghan & Sandmo, 1972; Srinivasan, 1973; Yitzhaki, 1974; Dhami, & al-Nowaihi, 2007; Litina & Palivos, 2016)[4], advances in the literature have also underscored the pivotal role of non-pecuniary factors. Particularly, more recent studies have shown that personal and social norms (e.g., see Wenzel, 2004; 2005; Alm & Torgler, 2006; Traxler, 2010; Kountouris & Remoundou, 2013; Blaufus et al., 2016)[5], one's valuation of public goods provision or the quality of governance (Fjeldstad & Semboja, 2001; Torgler, 2005a; Torgler, 2005b; Cummings et al., 2009; Lago-Penas & Lego-Penas, 2010; Ali *et al.,* 2014) and social and demographic factors (e.g., see Torgler, 2006; Alm & Torgler, 2006; Martinez-Vazquez & Torgler, 2009; Rodriguez-Justicia & Theilen, 2018)[6]. Our paper contributes to this literature by showing how external factors can interact with domestic factors to induce tax-behavioral changes.

The remainder of the paper is organized as follows. Section 2 proposes a conceptual framework to describe different ways through which migrant remittance may influence the decision to evade tax. Section 3 follows with an introduction to the dataset and its descriptive statistics. Section 4 puts forward an econometric model and the estimation strategy to identify the effects of interest. Finally, Section 5 presents the empirical results including, the robustness tests, while Section 6 concludes.

2. Conceptual Framework: Migrant Remittances and Tax Morale and Compliance

Migrant remittances can affect the tax morale of citizens through an *"income effect"*. Remittances are an additional non-labor income, and they increase the income-base of the receiver or disposable income of the receiver. Such income increases are often associated with an increase in the demand for public goods and services, as remittance receivers have more disposable income to consume. Bhavnani & Peters (2015), for instance, argued that remittances allow families to increase the quality of their homes, which might increase their demand for public goods such as those relating to sanitation. Remittances can also increase the demand for education and health-related public goods and services because they can afford them. When these public goods and services are underprovided or of poor quality, the higher disposable income induced by remittances allows

---

[4] Examples of factors include the tax rate, audit probability, and the penalty.
[5] Personal norms and values are one's beliefs and moral imperatives such as selflessness, moral integrity, and honesty, while social norms are socially shared unwritten norms and beliefs about how members of a group should behave.
[6] Examples here include marital status, income level, employment status, education, and gender.

remittance dependents to substitute these goods and services with private ones. This reduces the tax morale of remittance receivers more than non-receivers because the latter may not have the opportunity to access private goods and services.

This conclusion is consistent with the *psychological tax contract thesis* introduced by Feld & Frey (2007) or *Wicksell's Voluntary exchange theory over a century ago,* which posits that taxes are voluntary payments by individuals in exchange for public goods (see Musgrave, 1939; Christian, 1978). In retrospection, the psychological tax contract or the voluntary exchange theory considers the act of tax paying as a quasi-voluntary one and portrays the existence of the state as a social contract that defines the relationship between the government and the governed. This contract involves duties and rights (Feld & Frey, 2007) such that "while the government taketh away, it also giveth" (Alm, Jackson, & McKee, 1992a), and breaking this contract creates a vicious circle (Hug & Sporri, 2011; Alasfour, 2019). Consequently, when the government fails in its duty to provide [quality] public goods and services, the governed, will in return, fail in their social duty to pay tax.

Remittance inflows can also influence the tax morale of citizens by changing the preferences of policy-makers who determine the allocation of public goods and services or, more generally, by affecting the quality of domestic institutions and governance. Ahmed (2013) argued that small increases in remittances could shift the allocation of government expenditures on public goods and services to patronage. This is because remittances constitute a form of private subsidy for the provisioning of public goods and services. Hence, the government has more incentive to reduce and divert resources for private gains because it thinks that remittances will do the 'job', while access to remittances income makes remittance receivers reluctant in holding the government accountable because it makes political patronage less costly for them to bear (Ebeke, 2012).[7] Consistent with the *"psychological tax contract thesis"* or the *"voluntary exchange theory"* espoused above, this will negatively reduce the tax morale of citizens. Alternatively, remittances could influence tax morale by affecting internal political discontent, which can foster corruption.

---

[7] Abdih et al. (2012) also note that while remittances are not taxed directly, their presence expands the base for other taxes (e.g., the VAT), thereby making it less costly for the government to appropriate resources for its purposes. We argue that because this deteriorates the quality of governance, it will negatively reduce the tax morale of citizens.

Ahmed (2013) argued that remittance inflows could foster corruption by affecting internal political discontent in two ways. Firstly, remittance inflows necessarily require outward migration of citizens, some of whom may be dissatisfied with the incumbent government. Remittances may, therefore, lower internal political dissent and permit the government to engage in more significant corruption. Secondly, remittances inflows raise household income, which might lower the opportunity cost to rebel or increase government provisioning of patronage to keep its governing coalition if remittances foster political discontent. Because citizens perceive the government to be corrupt and ineffective, this will further dampen tax morale.

The foregoing discussions suggest that the "income effect" of remittance on the willingness to pay tax depends on the remittance recipient's valuation of the quality of public goods and services, or more generally the quality of governance. In particular, remittance recipients with positive valuations may have their willingness to pay tax unaffected as such income effect is only expected to increase consumption of private goods and drive private investments. However, remittance may negatively affect the willingness to pay tax among remittance recipients with negative valuations as the income effect would drive private provision and consumption of public goods and services. The objective of our paper is to empirically test this heterogeneity. Finally, akin to the "income-effect" channel discussed above, migrant remittances can also affect the tax morale of citizens in different ways such as through the "norms-transfer" channel as espoused in the introduction. As empirical tests of these other channels are outside the purview of our study, we do not discuss them.

3. Data description

To study the effect of remittance dependency on support for taxation in Africa, we use the Afrobarometer data, which contains a collection of nationally representative surveys across 34 African countries. The surveys measure public opinion on economic, political, and social aspects relevant to development, including citizens' attitudes and behavior towards paying taxes. For the baseline analysis, we use Round 7 conducted between 2016 and 2018 because it is the only round that provides information on whether the respondents depend on remittances. Rounds 4 and 6 will be used to assess the robustness of the results. They inform if the respondents received remittances but do not indicate if the respondents depend on receiving remittances. Some citizens may receive

remittances frequently but with a small amount, while others may receive remittances less regularly but with a substantial amount that may help households cover main expenses such as education, for instance. Therefore, the question in Rounds 4 and 6 assessing whether the respondents received remittances does not necessarily inform how dependent the respondents are on receiving remittances.

To assess whether the respondents depend on remittances, we refer to the question in Round 7 surveys that asks the respondents how dependent they are on receiving remittances. The possible responses range from not at all to a lot. We thus create a dummy variable, *"remit_depend"*, that equals one if the respondent depends on remittances and 0 otherwise.[8] In robustness checks, we also consider an ordinal variable that equals 0 for those who don't depend on remittances, 1 for those who depend on a little bit, and 2 for respondents who depend on a lot or somewhat.

Table 1 shows the percentage of people who depend on migrant remittances by country. The countries are listed in ascending order of the percentage of respondents who depend on remittances. As we can see in Column 2, on average, around 21% of the people interviewed reported being dependent on remittances in the full sample. However, we observe some heterogeneity across the countries. For example, Gambia has the highest proportion of people who depend on remittances, with a percentage of 47%. This is followed by Lesotho and Cape Verde with percentages of 37% and 31%, respectively. The country with the lowest proportion is Kenya, where only 5% of the respondents depend on remittances, followed by Tanzania, with a proportion of around 9%, and Mauritius, with 12%.

To measure support for taxation, we rely on the question of the surveys that asks whether the respondents agree that people must pay taxes or revenue owed to governments. The possible responses include *"strongly disagree"*, *"neither agree nor disagree"*, to "strongly agree". Table 2 shows the distribution of the respondents into these three categories: "agree/strongly agree", "neutral", and disagree or "strongly disagree". As shown in the table, around 75% of the respondents agree or strongly agree that people must pay taxes, while there are 20% of people who disagree or strongly disagree with this statement. The remaining 4% of the respondents neither

---

[8] We code missing values for the respondents who refused to respond or provided the response "I do not know"

agree nor disagree that people must pay taxes. The table also shows some heterogeneity across countries indicated by a high standard deviation of around 9%. Malawi records the lowest percentage of people (38%) who support taxation, and Sierra Leone is the country with the highest level of support for taxation, where 94% of the respondents agree that citizens must pay taxes. For the empirical analysis, we create a dummy variable *support_tax* that equals 1 for respondents who agree or strongly agree that citizens must pay taxes and 0 for all the other responses. Missing values are allocated for the respondents who did not or refuse to respond to the question.

The third set of critical variables in this paper is the variables that assess the quality of public services as perceived by the respondents. These variables will be used as determinants of the classification of the respondents into the different classes/subtypes that will be detected in the data if any. In other words, we will assess whether the probability that an individual belongs to a class with a specific relationship between remittance dependency and support for taxation depends on how well or badly the same individual assesses the quality of public services.

To create the variables that assess the quality of public services, we rely on the questions of the survey that ask the respondents how well or bad they think their government handles the following matters: health, educational needs, the provision of water, and sanitation services, and electricity supply. In Table 3 we show for each of the public service the proportion of people that have a positive appraisal about how their governments handle the matter. Overall, around 54% of the interviewees have a positive appraisal of how their government handles the provision of health services in the sample. This number is 57% for the provision of education needs. However, we have lower percentages for the provision of water and sanitation and for the provision of electricity for which we have 46% and 48%, respectively. In the empirical analysis, we will first create a dummy variable that equals 1 for respondents who have a positive appraisal of any of the public services and 0 otherwise. Second, we create four different dummy variables for each public service to test if some of them matter more than others.

In the analysis, we also control for a range of individual socioeconomic characteristics, including gender, education, location, age, access to information, poverty index, paying a bribe to receive official documents, household services, or to avoid problems with the police. We also add some

country-level variables such as GDP per capita, control of corruption, remittance inflows as a share of GDP, and the weighted average of income taxes in the host countries[9].

4. Empirical Specification

Let's define T_{ij} as the response of an individual i living in country j for whom T_{ij} equals 1 if she/he supports taxation and 0 otherwise. R_{ij} is the remittance dependency response of individual i from country j, which equals 1 if the individual depends on receiving remittances and 0 if no. n_j is the total number of individuals interviewed in country j such that $N = \sum_{j=1}^{n} n_j$, where N is the total number of observations in the data and n is the total number of countries. In the analysis, we also control for varying individual-level variables, X_{ij}, and country-level variables, Z_j. For simplicity, we define ω, the vector of all the individual and country-level variables.

A standard OLS or multilevel model would assume that all the observations fall into a single class/subtype and that the effects of the control variables, including the effect of remittance dependency on support for taxation, are similar for all the observations in the data. This would mask any potential unobserved heterogeneity in the data, increasing the risk of biased estimates on the relationship between remittance dependency and support for taxation. To deal with unobserved heterogeneity, we employ the finite multilevel mixture of regressions model (Asparouhov & Muthen, 2009; Henry & Muthen, 2010) which enables us to detect endogenously hidden classes or subtypes of individuals that exist in the data such that the conditional density of the dependent variables given all the explanatory variables is class-specific. Unlike traditional supervised or unsupervised clustering methods that identify groups of similar observations based on the unconditional density of one or more variables, the finite multilevel mixture approach identifies groups of similar observations based on the conditional density of the dependent variable given a set of explanatory variables. In other words, this method endogenously identifies classes or groups of individuals that have similar patterns on how the dependent variable is affected by

---

[9] We compute this variable in three steps. First, we use bilateral migration flow data to map the migration flows of each African country in our sample to the OECD countries. Second, we multiply that migration flows with the income tax revenue (% GDP) in the respective OECD country. Third, for each African country, we average across the bilateral pair country. Our computation uses income tax data from the UNU-WIDER Government Revenue Dataset and the bilateral migration flows from Abel & Cohen (2019).

the explanatory variables introduced in the analysis, without a-priori assumption on the sign, size, or significance of the estimates across the classes.

To define our multilevel finite mixture model, let us denote $class_{ij}$ the latent class variable at the individual level. We also consider the possibility that latent groups at the country level may exist that could affect the classification of the individuals into the identified individual-level classes. Thus, we define $gclass_j$ as the latent class at the country level. We assume that the total number of latent classes at the individual level varies between 1 and K while the country-level latent classes vary between 1 and L.

The general form of the density of the dependent variable, tax compliance (T), given all the explanatory variables and the parameters to estimate can be defined by $f(T|R,\omega;\theta)$. For a multilevel finite mixture model, this density can be explicitly written as follows:

$$f(T|R,\omega;\theta) = \prod_{j=1}^{n} \left[\sum_{l=1}^{L} \pi_l \left(gclass_j = l\right) \left[\prod_{i=1}^{nj} \sum_{k=1}^{K} \pi_k \left(class_{ij} = k\right) \times P\left(T_{ij} = 1|class_{ij} = k; R_{ij}, \omega_{ij}; \theta\right) \right] \right] \quad (1)$$

Where $\pi_l(gclass = l)$ is the probability that a given country j belongs to the country level latent class l, and n is the total number of countries in the sample. $\pi_k\left(class_{ij} = k|gclass_j\right)$ is the probability that an individual i from country j belongs to the individual level latent class k given that its country belongs to *gclass l* with a probability $\pi_l(gclass = l)$. The component $P\left(T_{ij} = 1|class_{ij} = k; R_{ij}, \omega_{ij}; \theta\right)$ in equation (1) is the probability that an individual i from country j supports taxation given that he/she belongs to class k.

To examine whether the quality of public services determines class membership, we endogenize the probability to belong to a given class k, i.e., the parameter $\pi_k()$ by defining it as a function of variables commonly named concomitants. In this paper, the concomitant variables are the variables that capture the respondents' appraisal of how their governments handle public services such as water & sanitation, health, education, and electricity. Let us denote ψ_{ij} the vector of concomitant

variables. Hence, by incorporating the concomitant variables in equation (1) we obtain the following equation (2):

$$f(T|R, \omega, \psi; \theta, \emptyset) = \prod_{j=1}^{J} \left[\sum_{l=1}^{L} \pi_l \left(gclass_j = l \right) \left[\prod_{i=1}^{nj} \sum_{k=1}^{K} \pi_k \left(class_{ij} = k, \psi_{ij}; \emptyset \right) \times \right. \right.$$
$$\left. \left. P\left(T_{ij} = 1 | class_{ij} = k; R_{ij}, \omega_{ij}; \theta \right) \right] \right] \quad (2)$$

Vector θ includes the parameters on the explanatory variables, including depending on remittances, while the vector $\emptyset$ consists of the parameters on the concomitant variables. To estimate the parameters θ and $\emptyset$, we maximize the log of $f(T|R, \omega; \theta)$ using the expectation-maximization (EM) algorithm (Dempster et al., 1977). An important question is how to set the maximum numbers of individual and country levels latent classes to estimate, i.e., class and gclass. While there is no rule of thumb, it is important to note that the number of parameters to estimate increases with the number of classes. Also, the higher is the number of parameters to estimate more data are needed to reach convergence in the estimations. Our approach is to estimate as many models with different combinations of individual and country-level classes as possible until we start obtaining convergence issues or observing classes with no or too few observations. In our estimations, we start observing some convergence issues or empty classes when K=7 and L=5. For the rest of the paper, we hence assume that there are between 1 and 7 latent classes/subtypes of individuals and that countries may be grouped between 1 and 5 groups.[10]

To select the model that best fits the data, we employ statistic criteria based on the log-likelihood of the estimations: the Bayesian information criterion (BIC), the Consistent Akaike information criterion (CAIC), and the Schwartz Bayesian criterion (SBC). These statistics help us select the model with the combination of gclass and class that best fit the data. The lower are these statistics greater is the goodness of fit.

---

[10] For each set of k and l we run the model with many different random starting values with 1000 iterations each to guarantee that we reach stable results. The estimations are run using LatentGold 5.0

5. Estimation results

5.1.Identifying latent classes/subtypes of individuals in the data

We estimate different models, changing the number of latent classes/subtypes while also accounting for possible unobserved heterogeneity at the country level that could affect individual responses. Recall that in the previous section, we defined ***gclass*** as the number of latent groups at the country level and ***class as*** the number of latent classes at the individual level. We run each model with many random starting points and several iterations to ensure that we reach convergence. For each combination of country-level and individual level latent classes, we report the values of the BIC, CAIC, and SBC. Our best model should be the one with the lowest values on all or at least two of the statistics criteria.

Table 4 reports the goodness of fit of the different models estimated, showing the statistic criteria (BIC, CAIC, and SBC). Among all the models estimated, the model where gclass=1 and class=1 is the one with the highest values on all the three statistic criteria. In fact, this is the model for which we assume that there are no hidden latent classes and that the effects of remittance dependency on support for taxation are the same for all the observations in the data. Table A2 in the appendix shows this model's estimation results and highlights that remittance dependency has a negative and statistically significant effect on support for taxation. This finding is consistent with the evidence in López García et al. (2022) that shows a negative relationship between receiving remittances and support for taxation. But because this model has the lowest goodness of fit, we can suspect that unobserved heterogeneity in the data may exist that needs to be addressed to best estimate the effect of dependence on remittances on support for taxation.

In the rest of Table 4, we show the goodness of fit for the models where we relax the hypothesis that there is a single class/type of individuals in the data while accounting for possible unobserved heterogeneity by using a varying combination of gclass and class. It is worth noting that the models where we only account for the heterogeneity at the individual level and leave aside potential heterogeneity at the country level (i.e. when class > 1 and gclass=1) have a weaker fit than the models where gclass is higher than 1. This indicates that the grouping of the countries also improves the classification at the individual level. We highlight in bold our best model – i.e., the model that records the lowest values on the statistics criteria. As we can observe, the best model

is the one that has 2 distinct latent classes/subtypes at the individual level and 4 latent groups at the country level. Another important remark is that regardless of the number of groups fixed at the country level, the model with 2 latent classes at the individual level is superior to any other models with more than 2 classes. This result confirms Konte's (2016) findings, who also detected 2 classes in the relationship between receiving remittances and support for democracy in Africa.

5.2.Remittance dependency and support for taxation across the two classes and the role of the quality public services

Table 5 reports the results of the selected model, showing the estimated coefficients across the two latent classes identified. In terms of the distribution of the individuals across the two classes, we find that the majority of the respondents have a higher probability of being in class 1 than in class 2. In fact, 62% of the respondents are in class 1, while 38% of the respondents are in class 2. Regarding the estimated coefficients of the variable of interest, the results show that the effect of remittance dependency on support for taxation depends on the class/subtype of individuals that we consider. In class 1 the estimated coefficient on *Remittance dependence* is positive but not statistically significant, while in class 2 it is negative and statistically significant at the 5% significance level. These findings indicate that in class 1, remittance dependency does not affect support for taxation. Hence remittances dependents in that class are as likely as non-dependents to support or not taxation. In class 2, however, remittances dependents are more likely to have lower support for taxation than non-remittance dependents. This result corroborates the idea espoused in section 2 that the higher disposable income induced by remittances allows remittance receivers to substitute public goods and services with private ones, leading to a reduction in the tax morale of remittance receivers than non-receivers because the latter may not have the opportunity to access private goods and services.

Looking at the other control variables, the results show that the effects of most of these variables also depend on the class that we consider. For instance, the effect of gender is only statistically significant in class 2 where being a female decreases support for taxation in this class. This result is somewhat inconsistent with some of those in the extant literature suggesting that women are more tax compliant than men, perhaps due to the large differences in honesty between men and women and because women are more prosocial than men (Alm & Torgler, 2006; Torgler & Valev,

2010). Education only matters in class 2 where an increase in the level of education is associated with higher support for taxation, which is consistent with Rodriguez-Justicia & Theilen (2018). Being located in an urban area increases tax compliance in class 1 while it does not have any effect in class 2. Access to information is statistically significant in both classes but with opposite effects. Particularly, whilst it reduces support for taxation in class 1, it enhances it in class 2. Asset-based poverty harms support for taxation in both classes. Regarding the country-level variables, we also find differing effects across the classes. For instance, in class 1, individuals who live in countries with a higher level of income per capita and higher remittance inflows relative to GDP tend to have higher support for taxation. In class 2, however, we obtain opposing results for these variables. Also, while an increase in the weighted average of income taxes in the host countries affect leads to an increase in the support for taxation in class 1, it has no significant effect in class 2.

The second main objective of this paper is to explore whether the quality of public services as perceived by the citizens explains class membership. To do so, we endogenize the classification of the individuals across the two classes by allowing the variable quality of public service delivery to be a concomitant variable. The results are shown at the bottom of Table 5. As a retrospection, the concomitant variable *Quality of public services* is a dummy that equals 1 if the respondent thinks that the government handles well at least one of the following: education, health, water and sanitation, and electricity. To estimate the effect of the quality of public services, we use class 1 as the control group. The results show a negative and statistically significant coefficient on the concomitant variable. This means that people who have a positive appraisal of how their governments handle at least one of the public services (health, education, water, and electricity) are less likely to be in the second class where remittance dependency reduces support for taxation. This result is somewhat consistent with the *psychological tax contract thesis* or *Wicksell's Voluntary exchange theory,* positing that taxes are voluntary payments by individuals in exchange for public goods or services (see Musgrave, 1939; Christian, 1978; Feld & Frey, 2007). Particularly, our result suggests that other things equal, provided individuals have a positive valuation of government provision of public services, their dependence on remittance would have little or no effect on their support for taxation.

In Table 6, we show the descriptive statistics of the remittance dependents, support for tax morale, and quality of public services variables across the two identified classes, as well as the descriptive statistics for the individual and country-level variables. As we can see, there is no large difference between the respondents who depend on remittances across the two classes (20% in class 1 against 23% in class 2). However, respondents in class 1 have higher support for taxation compared to respondents in class 1. In fact, in class 1, around 95% of the respondents support taxation, while in class 2 this percentage is down to 45%, yielding a difference of almost 50% percentage points. The distribution of how people evaluate the quality of public services also varies across the two classes. In class 1, 83% of the respondents positively assess how their governments handle the quality of public services against 69 in class 2. Regarding the other variables included in the analysis, we do not observe any large differences across the two classes.

Next, Table 7 shows in each country the percentage of respondents who have a higher probability of being classified in the second class where remittance dependency decreases support for taxation. The countries are ranked in descending order of the percentage of people that belong to class 2. The table shows that 10 out of the 34 countries in our sample have more than 50% of their respondents belonging to class 2. Nigeria is the only country where all the respondents have a higher probability of being sorted in class 2. Tanzania, Kenya, and Liberia have also most of their citizens in the sample belonging to class 2. There are 8 countries for which none of the respondents are sorted in class 2. These countries are Benin, Cameroon, Cote d'Ivoire, Gabon, Malawi, Niger, Sudan, and Togo.

5.3.Robustness Checks
In this section, we subject our analysis to a battery of sensitivity checks to ensure the robustness of our results. In particular, Table A3 in the appendix reports the estimation results for the second and third best models. Overall, the results align with the best baseline model where the effect of remittance dependency on support for taxation is class-specific with a significant negative coefficient in the second class and a non-statistically significant coefficient in the first class. Consistent with the previous result, we also find that a positive assessment of the quality of public services decreases the probability to belong to the second class.

Next, we look at whether some of the public services are more important than others in explaining the classification of the respondents across the two classes. The results are reported in Table 8 where we estimate 5 different models. In Model 1 we include all the measures of public services together as concomitant variables.[11] We find that the effect of remittance dependency on support for taxation is not statistically significant in class one but is negative and statistically significant in the second class. Looking at the concomitant variables, we find that all the estimates on the measures of public services are negative and statistically significant. Hence, a positive appraisal of how the government handles education, health, water and sanitation, and electricity decreases significantly the likelihood to be a subtype 2 citizen. In Models 2 to 5 we include the public service variables separately one by one in the estimations. The results are consistent with the previous finding regardless of the public service that we consider.

In our baseline model, the remittance dependency variable is dichotomous where 0 is coded for people who do not depend on remittances and 1 for respondents who depend on remittances regardless of the extent to which they depend on remittances. For robustness checks, we recode the variable into a categorical variable that ranges between 0 and 2 where 0 is coded for respondents who do not depend on remittances, 1 for those who depend on remittances just a little, and 2 is allocated for all the other respondents that depend somewhat or a lot on remittances. Hence, a higher value means a higher dependence on remittances. Table 9 reports the results of this exercise. As shown in the table, whereas an increase in remittance dependency does not affect support for taxation in the first class, it does in the second class. In line with the previous findings, the results support that a positive assessment of how the government handles the basic public services decreases significantly the probability to be in class 2 where remittance dependency affects negatively pro-tax compliant behavioral tendencies.

One important aspect of our analysis is modeling how the valuation of the quality of public services determines class membership. Table 10 shows the distribution of how people evaluate the quality of public services across the two classes is heterogeneous. Among people who have a negative appraisal of the quality of public services, 48% are in class 1, and the remaining 52% are in class

---

[11] Let us note that the individual and country-level variables that were previously controlled in the previous Table 5 are also added across all the estimations in Table 6 but not reported here.

2. 66% of those who have a positive appraisal of the quality of public services are in class 1 and 34% in class 2. In sum, this table shows that the two classes identified do not coincide with an ad hoc grouping of the data based on individuals' valuation of the quality of public services. This means that besides the quality of public services there may be other important factors that also explain class membership. Hence, examining the heterogeneous effect of migrant remittances by grouping the data based on the quality of public services would fail to correct for unobserved heterogeneity because different individuals with similar (different) valuations of the quality of the public services fall into different (similar) classes. Although we focus on the quality of public services which fits into the *psychological tax contract thesis*, we follow up the prior argument about other factors explaining class membership by controlling for additional concomitant variables, including gender, education, employment status, bribe payment, access to information and poverty index. The results are reported in Table 11 and confirm our baseline results where the quality of public services is an important determinant of the classification of the observations across the two classes. Among the additional concomitant variables included in the model, education, unemployment, access to information and poverty reduces significantly the probability to be sorted in the second class where remittances decrease taxation support. In contrast, bribe payment to access public services increases significantly to probability to fall into class 2.

As a final robustness check, we use the surveys in Round 4 [2008-2009] and Round 6 [2014-2016] that include a question on how often a respondent received migrant remittances in the past 12 months. Unlike Round 7, these two rounds do not allow an assessment of whether the respondents depend on remittances. We argue that the number of times a person receives remittances does not necessarily reflect how the person depends on remittances. In fact, some people may receive remittances frequently but with a little amount, while others may receive them less frequently but with a substantial amount that may help households cover major expenses such as education at the beginning of the school year. The results are reported in Table 12. The findings are consistent with the baseline results. Particularly, we find that in the first class, receiving remittances does not have a significant effect on support for taxation, while in the second class it reduces the probability to have a positive attitude towards paying taxes. Furthermore, we find negative and significant coefficients on all the public service variables, meaning that a positive assessment of the quality of public services reduces the probability of belonging to the remittance tax-reducing class. It is

also worth noting that in Table 9 we have an equal distribution of the respondents across the two classes. We have roughly 50% of the respondents that belong to each of the two identified latent classes.

We acknowledge that we are not ruling out potential endogeneity that may still exist in our analysis due to omitted variables that could explain, on the one hand, why some people have relatives who migrate and thus receive remittances and, on the other hand, differences in support for taxation. However, the mixture of regressions model is implemented to correct or reduce significantly unobserved heterogeneity that could bias the results. Individuals that share similar patterns on how the omitted variables may affect their support for taxation are more likely to fall into the same classes. If significant omitted variables bias still existed within the two classes, the goodness of fit would show that the best model is a model with more than two classes.

6. Conclusion

How migrant remittance shapes the behaviors of those left behind has become an important area of economic inquiry in recent times. However, extant studies have largely focused on attitudinal changes relating to political and social engagement. We extend this literature in this paper by examining whether attitudinal change associated with the support of taxation is also affected by migrant remittance. We also examine how an individual's valuation of the quality of public services shapes such a relationship. We address this question using a sample comprising 45,000 individuals across 34 African countries we derived from the Afrobarometer survey round 7 [2016-2018]. Applying the finite multilevel mixture of regressions model that helps to endogenously identify latent classes/subtypes of individual idiosyncrasies in our data, we find that our data is best generated by an econometric model with two classes/subtypes of individuals. Whereas we do not find any significant evidence that dependence on remittance affects support for taxation in the class that contains 62% of the individuals, results from the second class with fewer observations show a significant negative effect of dependence on remittances on support for taxation. Interestingly, analysis of the probability of belonging to the second class reveals that public services' quality plays an important role. That is, citizens who have a positive appraisal of the quality of the public service delivery have a lower probability of belonging to the class/subtype where dependence on remittances reduces tax compliance.

As we argued in the paper, one of the plausible explanations for this result is that when the quality of public services is poor, migrant remittances may shift the consumption of public goods and services to private goods and services. In this case, the remittance dependent becomes more reluctant to pay taxes. This view is consistent with the *psychological tax contract thesis* or the over a century ago *Wicksell's Voluntary exchange theory,* arguing that one of the reasons individuals voluntarily comply to pay tax is because they view it as part of a social contract where they help fund the public purse and the state provides public goods and services in return. Hence, the incentive to pay tax diminishes as the state fails in fulfilling its part of the social contract which in our case implies under-provision of quality public goods and services.

From a policy perspective, our result underscores a potential negative consequence or disciplinary effect of migrant remittance in the migrant home country, while emphasizing the need for efficient public goods/services provisioning to counteract this adverse effect. Along this line, rather than considering migrant remittances to be entirely bad for tax compliance, we argue the need for more efficient institution designs across African countries that guarantee efficient and effective provisioning of quality public goods. The gains of migrant remittance in raising people out of poverty through its effect on schooling and entrepreneurship, among others, are well documented in the literature. Hence, institutional designs that deliver the right amount and quality of public goods/services would go a long way in moderating the negative impact of remittances on government revenues, while preserving these positive gains derived from migrant remittances.

The empirical analysis conducted in this paper appeals strongly to the income effect channel which we espoused in the conceptual framework section. However, migrant remittances may also affect the tax morale of the receiver via the "norm-transfer channel". Levitt (1998) introduced the concept of social remittances and argued that remittances serve as conduits of financial and norm transfers from migrants' host countries to migrants' countries of origin. It can well be that norms of tax [non-]compliance behavior is among these social remittances internalized by migrants and transferred to their home country either directly, say when they inveigle their loved ones to comply with certain norms and beliefs by withholding transfer, or indirectly through social learning. In this case, remittance receivers may be more willing to agree that citizens should pay taxes depending

on the prevailing tax-compliance norms of the host country of the migrant sending the money. This is one promising area future studies can turn to.

Table 1: Percentage of citizens who depend on remittances by country

Country	Remittance Dependence (%)
Kenya	5.25
Tanzania	8.98
Mauritius	12.04
Uganda	12.54
Botswana	12.87
Benin	13.44
Zambia	13.44
Sierra Leone	14.45
Madagascar	14.68
Namibia	15.90
Tunisia	16.11
Malawi	16.36
Gabon	18.11
Togo	18.53
Cote d'Ivoire	18.71
Ghana	19.39
Sao Tome and Principe	19.62
Burkina Faso	21.92
Liberia	21.92
Guinea	21.92
Morocco	22.76
Senegal	23.94
Eswatini	24.48
Mozambique	25.48
Mali	25.69
Zimbabwe	26
Cameroon	26.09
Sudan	28.87
Niger	29.14
South Africa	29.54
Nigeria	30.28
Cape Verde	31.11
Lesotho	37.33
The Gambia	46.86
Sample average	21.24

Table 2: Do you agree or disagree that people must pay taxes/revenues owe to the government?

Country	Disagree/Strongly disagree	Neither agree/nor disagree	Agree/strongly Agree
Benin	39.5	1.92	58.58
Botswana	8.63	2.62	88.75
Burkina Faso	26.18	4.31	69.51
Cameroon	22.7	2.47	74.83
Cape Verde	25.53	10.18	64.29
Cote d'Ivoire	27.22	8.81	63.97
Eswatini	15.64	2.48	81.88
Gabon	23.74	2.43	73.83
The Gambia	8.59	1.19	90.22
Ghana	8.2	2.26	89.53
Guinea	37.86	4.75	57.39
Kenya	17.98	4.51	77.5
Lesotho	26.04	3.14	70.82
Liberia	10.28	0.33	89.38
Madagascar	15.23	6.18	78.6
Malawi	58.85	2.92	38.23
Mali	12.75	2.52	84.73
Mauritius	17.57	9.31	73.11
Morocco	20.27	13.03	66.7
Mozambique	11.73	6.33	81.95
Namibia	16.14	6.93	76.93
Niger	27.82	1.35	70.83
Nigeria	24.2	3.53	72.27
Sao Tome and Principe	9.83	2.44	87.73
Senegal	17.61	1.94	80.45
Sierra Leone	4.3	1.67	94.04
South Africa	25.67	7.87	66.46
Sudan	30.23	5.81	63.96
Tanzania	14.3	1.99	83.7
Togo	38.61	6.52	54.87
Tunisia	20.68	0.77	78.55
Uganda	12.47	2.04	85.5
Zambia	10.83	2.22	86.94
Zimbabwe	10.37	4.08	85.55
Total Sample	**19.95**	**4.11**	**75.94**

Table 3: Percentage of people with a positive appraisal of how their governments handle public services

Country	Health services	Education	Water&sanitation	Electricity	At least one public service
Benin	51.31	55.45	37.06	34.91	74.21
Botswana	72.01	67.19	65.51	75.28	92.41
Burkina Faso	66.78	62.31	41.7	30.778	81.79
Cameroon	58.48	62.33	33.33	29.6	76.85
Cape Verde	47.68	55.24	46.32	58.76	80.23
Cote d'Ivoire	59.02	64.94	37.18	51.09	82.48
Eswatini	84.34	83.85	64.51	57.56	94.96
Gabon	28.83	15.24	15.67	25.1	45.40
The Gambia	54.08	59.91	57.27	65.92	84.68
Ghana	69.35	83.13	65.33	75.45	91.26
Guinea	40.94	39.51	17.78	17.96	58.62
Kenya	69.2	76.75	49.29	69.93	90.28
Lesotho	66.26	62.21	43.86	43.12	85.18
Liberia	49.92	59.65	52.34	41.01	79.30
Madagascar	44.99	54.17	35.02	13.84	69.92
Malawi	41.15	42.39	40.74	14.89	63.10
Mali	62.45	49.54	49.58	28.33	83.79
Mauritius	67.69	70.94	61.45	84.74	88.52
Morocco	18.22	19.12	46.25	63.96	70.40
Mozambique	60.16	64.24	46.71	52.71	76.20
Namibia	68.1	68.24	57.12	51.52	84.52
Niger	46.16	38.82	38.08	27.87	64.42
Nigeria	50.91	50.57	39.99	36.19	70.17
Tome and Principe	60.19	72.74	59.98	53.76	86.04
Senegal	54.15	52.06	58.52	61.18	87.13
Sierra Leone	55.79	78.33	49.02	50.87	88.89
South Africa	42.34	50.98	44.93	46.69	70.57
Sudan	29.54	28.81	28.96	38.28	56.80
Tanzania	58.96	73.32	48.16	50.13	84.38
Togo	37.69	37.7	36.57	42.3	68.23
Tunisia	33.27	23.83	41.98	62.62	73.19
Uganda	46.72	52.94	47.01	44.08	78.28
Zambia	57.69	60.24	38.98	44.14	76.17
Zimbabwe	44.64	55.34	35.25	46.46	74.70
Total	53.57	57.06	45.61	47.8	77.88

Table 4: Goodness of fit of the multilevel mixture models

Glass	Class	BIC	CAIC	SABIC
1	1	46078.4791	46099.4791	46011.741
1	2	44687.2504	44731.2504	44547.4181
1	3	44262.5177	44329.5177	44049.5913
1	4	44522.3581	44612.3581	44236.3375
1	5	44315.3008	44428.3008	43956.186
1	6	44430.253	44566.253	43998.0441
1	7	44454.624	44613.624	43949.3209
2	2	43927.7364	43973.7364	43781.5481
2	3	43977.7148	44047.7148	43755.2543
2	4	44091.7769	44185.7769	43793.0443
2	5	44106.3725	44224.3725	43731.3677
2	6	44212.7364	44354.7364	43761.4594
2	7	44317.7245	44483.7245	43790.1754
3	2	43794.1817	43842.1817	43641.6374
3	3	43909.5335	43982.5335	43677.539
3	4	44019.8278	44117.8278	43708.3832
3	5	44155.112	44278.112	43764.2172
3	6	44248.3203	44396.3203	43777.9753
3	7	44362.4408	44535.4408	43812.6456
4	**2**	**43738.0915**	**43788.0915**	**43579.1911**
4	3	43883.682	43959.682	43642.1534
4	4	44068.9703	44170.9703	43744.8136
4	5	44160.6911	44288.6911	43753.9063
4	6	44326.1426	44480.1426	43836.7296
4	7	44402.5814	44582.5814	43830.5402
5	2	43769.2809	43821.2809	43604.0245
5	3	43944.0985	44023.0985	43693.036
5	4	44008.9474	44114.9474	43672.0787
5	5	44242.613	44375.613	43819.938
5	6	NA	NA	NA
5	7	NA	NA	NA

Note: This table reports the goodness of fit for the different multilevel mixture models estimated, using different values for the number of clusters. *gclass* refers to the number of groups at the country level, while *class* refers to the number of classes at the individual level. Selected model in bold.

Table 5: Remittance dependence, support for taxation and public services quality

Dependent variable: Probability to support taxation	Class1 (π_1=62%)	Class2 (π_2=38%)
Remittance dependence	0.0113	-0.0969**
	[0.164]	[0.0423]
Female	0.0299	-0.1075***
	[0.1334]	[0.0365]
Some primary education	-0.315	0.1153*
	[0.2087]	[0.0637]
Primary education completed	-0.2759	0.3087***
	[0.1886]	[0.0583]
Secondary education	0.1703	0.3232***
	[0.3753]	[0.0701]
Post-secondary education	0.3071	0.4555***
	[0.3265]	[0.0719]
Age (18-25)	0.3058*	-0.2103***
	[0.1788]	[0.0458]
Age (26-35)	0.1436	-0.1094**
	[0.1593]	[0.0436]
Urban	1.0992***	-0.0572
	[0.1976]	[0.0395]
Access information	-0.3205*	0.2083***
	[0.1983]	[0.0586]
Employed	0.2242	0.0279
	[0.1704]	[0.045]
Unemployed	0.4877**	-0.0936**
	[0.2254]	[0.0461]
Bribe payment	0.6198***	-0.2933***
	[0.217]	[0.053]
Poverty index	-0.2654***	-0.2321***
	[0.0991]	[0.0244]
GDP/Capital (logs)	7.5715***	-0.428***
	[0.9972]	[0.0377]
Remittances/GDP (logs)	2.8971***	-0.1401***
	[0.3959]	[0.0192]
OECD income tax/GDP(logs)	28.2941***	-0.3501
	[6.0558]	[0.2826]
Control Corruption	-3.4531***	0.3439***
	[0.7961]	[0.0484]
	[4.7894]	[0.0879]
Intercept	-134.4273***	4.6005***
	[23.2074]	[0.7662]
Concomitant variable		
Quality of public services (Good)		-0.4003***
		[0.0528]
Number of observations	42,521	
Number of countries	34	

Notes: The dependent variable is the probability to agree that a citizen must pay taxes. Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Year and country fixed-effects are included

Table 6: Descriptive statistics by class

	Class 1	Class 2	(Class1 - Class 2)
Remittance dependence (%)	20.1	23.2	-3.1
Support for taxation (%)	95	45.1	49.9
Public services well-handled (%)	83	69.7	13.3
Female (%)	49.3	49.8	-0.5
Primary education completed (%)	35.1	32	3.1
Secondary education completed (%)	17.7	14.8	2.9
Post-secondary education (%)	14.9	16.2	-1.3
Age (18-25) (%)	26.1	27.3	-1.2
Age (26-35) (%)	28.1	28.5	-0.4
Urban (%)	44.4	46.3	-1.9
Access information (%)	88.7	87.4	1.3
Employed (%)	38.5	31.9	6.6
Unemployed (%)	26.9	27.6	-0.7
Bribe payment (%)	15.3	14.6	0.7
Log GDP/Capital (Mean)	8.2	8.3	-0.1
Log Remittances/GDP (Mean)	0.83	0.74	0.09
Log OECD income tax/GDP (Mean)	2.51	2.52	-0.01
Country-level of control corruption (Mean)	-0.5	-0.4	-0.1

Table 7: Percentage of respondents by country sorted in class 2

Country	Respondents in class 2 (%)
Nigeria	100
Tanzania	99.91
Kenya	99.52
Liberia	99.24
Zambia	97.73
Sierra Leone	97.05
Mali	96.88
Zimbabwe	85.53
Uganda	85.37
Guinea	57.5
Cape Verde	35.78
Morocco	33.86
South Africa	33.27
Lesotho	28.61
Mauritius	27.05
Namibia	22.64
Tunisia	21.57
Eswatini	18.25
Madagascar	13.68
Sao Tome and Principe	12.08
Botswana	10.62
Mozambique	5.77
Senegal	3.84
Ghana	2.51
Burkina Faso	1.87
The Gambia	1.33
Benin	0
Cameroon	0
Cote d'Ivoire	0
Gabon	0
Malawi	0
Niger	0
Sudan	0
Togo	0

Table 8: Remittance dependence, support for taxation, and public services quality

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Class 1	Class 2	Class 1	Class 2	Class 1	Class 2	Class 1	Class 2	Class 1	Class 2
	(π_1=68.6%)	(π_2=31.4%)	(π_1=65%)	(π_2=35%)	(π_1=72%)	(π_2=28%)	(π_1=72%)	(π_2=28%)	(π_1=74%)	(π_2=26%)
Remittance dependence	0.1242	-0.1576**	0.1539	-0.1859***	0.0904	-0.202***	0.0477	-0.1711***	0.1715	-0.1751***
	[0.0995]	[0.0615]	[0.1081]	[0.0569]	[0.1009]	[0.0683]	[0.101]	[0.0658]	[0.116]	[0.0635]
Concomitant variables										
Education (Good)		-0.2015***		-0.3845***						
		[0.048]		[0.0415]						
Health (Good)		-0.1425***				-0.2832***				
		[0.0476]				[0.0383]				
Water and sanitation (Good)		-0.1153**						-0.2523***		
		[0.0466]						[0.0389]		
Electricity (Good)		-0.1912***								-0.3607***
		[0.046]								[0.0432]
Number of observations	40329		41912		41987		41887		41436	
Number of countries	34		34		34		34		34	

Notes: The dependent variable is the probability to agree that a citizen must pay taxes. Each model contains the same controls as in the baseline model. Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

	Class 1 (π_1=67.8%)	Class 2 (π_2=32.2%)
Remittance dependence (ordinal:0-2)	0.144	-0.0849***
	[0.1123]	[0.0342]
Concomitant Variables		
Education (Good)		-0.2283***
		[0.0459]
Health (Good)		-0.1224***
		[0.0454]
Water and Sanitation (Good)		-0.0874**
		[0.0436]
Electricity (Good)		-0.2471***
		[0.0427]
Number of observations	40,329	
Number of countries	34	

NOTES: The dependent variable is the probability to agree that a citizen must pay taxes. The variable must pay taxes is ordinal ranging from 0 to 2 where a higher value means higher support for taxation. Each model contains the same controls as in the baseline model. Standard errors in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 10: Distribution of the valuation of the quality of public services across the two classes

	Class 1	Class 2	Total
Poor quality of public services	48%	52%	100
Good quality of public services	66%	34%	100

This table is drawn using our baseline model classification

Table 11: Remittance dependence, support for taxation, and public services quality with additional concomitant variables

Dependent variable: Probability to support taxation	Class1 (π_1=71.5%)	Class2 (π_2=28.5%)
Remittance dependence	0.31	-0.1412**
	[0.3592]	[0.0673]
	Class1	Class2
Intercept	-17.3681***	-7.2292***
	[6.3913]	[1.5953]
Concomitant variables		
Quality of public services (Good)		-0.3607***
		[0.045]
Female		0.0675
		[0.0753]
Primary education completed		0.0126
		[0.0974]
Secondary education		-0.1863*
		[0.1083]
Post-secondary education		-0.4451***
		[0.1141]
Unemployed		-0.1482*
		[0.0824]
Bribe payment		0.2076***
		[0.0521]
Access information		-0.1863*
		[0.1074]
Poverty index		-0.177***
		[0.0612]
Number of observations		42,521
Number of countries		34

Notes: The dependent variable is the probability to agree that a citizen must pay taxes. Standard errors in parenthesis. Each model contains the same controls as in the baseline model *** p<0.01, ** p<0.05, * p<0.1

Table 12: Receiving remittances, support for taxation, and public services quality (Rounds 4 & 6)

	Class1 $(\pi_1=50\%)$	Class2 $(\pi_2=50)$
Remittance receiver	-0.139	-0.1719***
	[0.1675]	[0.029]
Concomitant variables		
Education (Good)		-0.275***
		[0.0423]
Health (Good)		-0.2112***
		[0.0417]
Water and sanitation (Good)		-0.1178***
		[0.0389]
Electricity (Good)		-0.1137***
		[0.038]
Number of observations	73862	
Number of countries	35	

NOTES: The dependent variable is the probability to agree that a citizen must pay taxes, rounds 4 & 6 of the Afrobarometer. Each model contains the same controls as in the baseline model Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

References

Abdih, Y., Chami, R., Dagher, J., & Montiel, P. (2012a). Remittances and institutions: Are remittances a curse? *World Development,* 40(4), 657-666.

Abel, G. J., & Cohen, J. E. (2019). Bilateral international migration flow estimates for 200 countries. *Scientific Data*, 6(1), 1-13.

Acosta, P., Calderón, C., Fajnzylber, P., & Lopez, H. (2008). What is the impact of international remittances on poverty and inequality in Latin America? *World Development*, 36(1), 89-114.

Ahmed, F. (2013). Remittances deteriorate governance. *Review of Economics & Statistics*, 95(4), 1166-1182.

Alasfour, F. (2019). Costs of distrust: The virtuous cycle of tax compliance in Jordan. *Journal of Business Ethics,* 155, 243–258.

Ali, M., Fjeldstad, O., & Sjursen, I. (2014). To pay or not to pay? Citizens' attitudes toward taxation in Kenya, Tanzania, Uganda, and South Africa. *World Development,* 64, 828-842.

Allingham, M., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics*, 1(3/4), 323-338.

Alm, J., Jackson, B., & McKee, M. (1992). Institutional uncertainty and taxpayer compliance. *American Economic Review*, 82(4), 1018–1026

Alm, J., & Torgler, B. (2006). Culture differences and tax morale in the United States and in Europe. *Journal of Economic Psychology*, 27(2), 224-246.

Anderson, G., Pittau, G., Zelli, R., & Thomas, J. (2018). Income inequality, cohesiveness and commonality in the euro area: A semi-parametric boundary-free analysis. *Econometrics*, 6(2), 15.

Asparouhov, T., Muthen, B., 2009. Multilevel regression mixture analysis. *Journal of the Royal Statistical Society*, 172, 639–657.

Basu, B., & Bang, J. (2015). *International remittance payments and the global economy*. Routledge, NY: US

Batista, C., & Vicente, P. (2011). Do migrants improve governance at home? Evidence from a voting experiment. *World Bank Economic Review,* 25(1), 77–104.

Barsbai, T., Rapoport, H., Steinmayr, A., & Trebesch, C. (2017). The effect of labor migration on the diffusion of democracy: evidence from a former Soviet Republic. *American Economic Journal: Applied Economics*, 9(3), 36-69.

Batista, C., Seither, J., & Vicente, P. (2019). Do migrant social networks shape political attitudes and behavior at home? *World Development*, 117, 328–343

Beine, M., Docquier, F., & Schiff, M. (2013). International migration, transfer of norms and home country fertility. *Canadian Journal of Economics*, 46(4), 1406-1430.

Bertoli, S., & Marchetta, F. (2015). Bringing it all back home–return migration and fertility choices. *World Development*, 65, 27-40.

Bhavnani, R., & Peters, M. (2015). *The joint effects of emigration and remittances on public goods provisioning.* Memeo.

Blaufus, K., Hundsdoerfer, J., Jacob, M., & Sünwoldt, M. (2016). Does legality matter? The case of tax avoidance and evasion. *Journal of Economic Behavior & Organization*, *127*, 182-206.

 Chauvet, L., & Mercier, M. (2014). Do return migrants transfer political norms to their origin country? Evidence from Mali. *Journal of Comparative Economics*, 42(3), 630-651.

Christian, B. (1978). Theories of voluntary exchange in the theory of public goods. *Annals of Public & Cooperative Economics,* 49(1), 3-78.

Combes, J-L., & Ebeke, C. (2011). Remittances and household consumption instability in developing countries. *World Development*, 39(7), 1076-1089.

Cummings, R. G., Martinez-Vazquez, J., McKee, M., & Torgler, B. (2009). Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment. *Journal of Economic Behavior & Organization*, *70*(3), 447-457.

Dempster, A.P., Laird, N.M., &Rubin, D.B. (1977). Maximum likelihood from incomplete data via the EM Algorithm. *Journal of the Royal Statistical Society*, Series B. 39 (1), 1–38.

Dhami, S., & al-Nowaihi, A. (2007). Why do people pay taxes? Prospect theory versus expected utility theory. *Journal of Economic Behavior & Organization*, 64 (1), 171–192.

Docquier, F., Lodigiani, E., Rapoport, H., & Schiff, M. (2016). Emigration and democracy. *Journal of Development Economics*, *120*, 209-223.

Ebeke, C. (2012). Do remittances lead to a public moral hazard in developing countries? An empirical investigation. *Journal of Development Studies*, 48(8), 1009-1025.

Edwards, A., & Ureta, M. (2003). International migration, remittances, and schooling: Evidence from El Salvador. *Journal of Development Economics*, 72(2), 429-461.

Escriba-Folch, A., Meseguer, C., & Wright, J. (2018). Remittances and protests in dictatorships. *American Journal of Political Science*, 62(4), 889-904.

Feld, L., & Frey, B. (2007). Tax compliance as the result of psychological tax contract: the role of incentives and responsive regulations. *Law and Policy,* 29(1), 102-120.

Fjeldstad, O. & Semboja, J. (2001). Why people pay taxes: The case of the development levy in Tanzania*. World Development*, 29(12), 2059-2074.

Flunger, B., Trautwein, U., Nagengast, B., Ludke, O., Niggli, A., & Schnyder, I. (2019). Using multilevel mixture models in educational research: An illustration with homework research. The Journal of Experimental Education, 89, 209–236

Germano, R. (2013). Migrants' remittances and economic voting in the Mexican countryside. *Electoral Studies*, 32(4), 875-885.

Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics,* 90(1), 144-52.

Henry, K. L., & Muthén, B. (2010). Multilevel latent class analysis: An application of adolescent smoking typologies with individual and contextual predictors. *Structural Equation Modeling*, 17(2), 193-215.

Höckel, L. S., Santos Silva, M., & Stöhr, T. (2018). Can parental migration reduce petty corruption in education? *World Bank Economic Review*, 32(1), 109-126.

Hug, S., & Spörri, F. (2011). Referendums, trust, and tax evasion. *European Journal of Political Economy*, 27(1), 120-131.

Ivlevs, A., & King, R. M. (2017). Does emigration reduce corruption? *Public Choice*, 171(3-4), 389-408.

Konte, M. (2018). Do remittances not promote growth? A finite mixture-of-regressions approach. *Empirical Economics,* 54(2), 747-782.

Konte, M., & Ndubuisi, G. (2020). *Remittances and bribery in Africa* (pp. 179-198). Routledge.

Kountouris, Y., & Remoundou, K. (2013). Is there a cultural component in tax morale? Evidence from immigrants in Europe. *Journal of Economic Behavior & Organization*, 96, 104-119.

Lago-Penas, I. & Lego-Penas, S. (2010). The determinants of tax morale in comparative perspective: Evidence from European countries. *European Journal of Political Economy,* 26, 441-453.

Litina, A., & Palivos, T. (2016). Corruption, tax evasion and social values. *Journal of Economic Behavior & Organization*, *124*, 164-177.

Levitt, P. (1998). Social remittances: Migration driven local-level forms of cultural diffusion. *International Migration Review,* 32(4), 926–948.

López García, A. I., & Maydom, B. (2021). Migrants' remittances, the fiscal contract and tax attitudes in Africa and Latin America. *Political Studies*, 00323217211054657.

Martinez-Vazquez, J., & Torgler, B. (2009). The evolution of tax morale in modern Spain. *Journal of Economic Issues*, 43(1), 1-28.

Mitra, A., Bang, J. T., & Abbas, F. (2021). Do remittances reduce women's acceptance of domestic violence? Evidence from Pakistan. *World Development*, 138, 105149.

Muthén, B., & Asparouhov, T. (2009). Multilevel regression mixture analysis. Journal of the Royal Statistical Society: Series A (Statistics in Society), 172(3), 639-657.

Musgrave, R. (1939). The voluntary exchange theory of public economy. *Quarterly Journal of Economy*, 53(2), 213-137.

Nikolova, M., Roman, M., & Zimmermann, F. (2017). Left behind but doing good? Civic engagement in two post-socialist countries. *Journal of Comparative Economics*, 45(3), 658-684.

Pfutze, T. (2012). Does migration promote democratization? Evidence from the Mexican transition. *Journal of Comparative Economics,* 40(2), 159–175.

Rodriguez-Justicia, D., & Theilen, B. (2018). Education and tax morale. *Journal of Economic Psychology,* 64(C), 18-48.

Spilimbergo, A. (2009). Democracy and foreign education. *American economic review*, *99*(1), 528-43.

Srinivasan, T. N. (1973). Tax evasion: A model. *Journal of Public Economics*, *2*(4), 339-346.

Torgler, B. (2005a). Tax morale and direct democracy. *European Journal of Political Economy,* 21(2), 525–531.

Torgler, B. (2005b). Tax morale in Latin America. *Public Choice,* 122(1/2), 133-157.

Torgler, B. (2006). The importance of faith: Tax morale and religiosity. *Journal of Economic Behavior & Organization, 61*(1), 81–109.

Torgler, B., & Schneider, F. (2005). Attitudes towards paying taxes in Austria: An empirical analysis. *Empirica*, 32, 231-250.

Torgler, B., & Valev, N. T. (2010). Gender and public attitudes toward corruption and tax evasion. *Contemporary Economic Policy*, *28*(4), 554-568.

Traxler, C. (2010). Social norms and conditional cooperative taxpayers. *European Journal of Political Economy,* 26(1), 89–103.

Tuccio, M., & Wahba, J. (2018). Return migration and the transfer of gender norms: evidence from the Middle East. *Journal of Comparative Economics*, 46(4), 1006-1029.

Tuccio, M., Wahba, J., & Hamdouch, B. (2019). International migration as a driver of political and social change: evidence from Morocco. *Journal of Population Economics*, *32*(4), 1171-1203.

Tyburski, M. (2012). The resource curse reversed? Remittances and corruption in Mexico. *International Studies Quarterly*, 56(2), 339-350.

Tyburski, M. D. (2014). Curse or cure? Migrant remittances and corruption. *Journal of Politics*, 76(3), 814-824.

Wenzel, M. (2004). An analysis of norm processes in tax compliance. *Journal of Economic Psychology*, 25(2), 213-228.

Wenzel, M. (2005). Motivation or rationalization? Causal relations between ethics, norms, and tax compliance. *Journal of Economic Psychology,* 26, 491-508.

World Bank. (2019). *Migration and remittances: recent developments and outlook*. Migration and Development Brief 31 World Bank. Washington DC: US

Appendix

Table A1: Round 7, surveys year

Country	Survey year
Kenya	2016
Tanzania	2017
Mauritius	2017
Uganda	2016/2017
Botswana	2017
Benin	2016/2017
Zambia	2017
Sierra Leone	2018
Madagascar	2018
Namibia	2017
Tunisia	2018
Malawi	2016/2017
Gabon	2017
Togo	2017
Cote d'Ivoire	2016/2017
Ghana	2017
Sao Tome and Principe	2018
Burkina Faso	2017
Liberia	2018
Guinea	2017
Morocco	2018
Senegal	2017
Eswatini	2018
Mozambique	2018
Mali	2017
Zimbabwe	2017
Cameroon	2018
Sudan	2018
Niger	2018
South Africa	2018
Nigeria	2017
Cape Verde	2017
Lesotho	2017
The Gambia	2018

Table A2: Remittance dependence and support for taxation (Model with class=1 and gclass=1)

Dependent variable: Probability to support taxation	[1]
Remittance dependent	-0.1403
	[0.0282]***
Control Corruption	0.0105
	[0.0286]
Female	-0.0302
	[0.0237]
Some primary education	-0.036
	[0.0382]
Primary education completed	0.2176
	[0.0344]***
Secondary education	0.294
	[0.0427]***
Post-secondary education	0.2603
	[0.0452]***
Age (18-25)	-0.1385
	[0.0293]***
Age (26-35)	-0.0788
	[0.0284]***
Urban	0.0667
	[0.025]***
Access information	0.1518
	[0.0357]***
Employed	0.2198
	[0.0288]***
Unemployed	0.1558
	[0.0297]***
Bribe payment	-0.1032
	[0.0326]***
Poverty index	-0.1977
	[0.0153]***
GDP/Capital (logs)	-0.1156
	[0.0197]***
Remittances/GDP (logs)	0.0567
	[0.0099]***
OECD income tax/GDP(logs)	-0.4236
	[0.1711]**
Intercept	2.2611
Number of observations	42,521
Number of countries	34

This table reports the results where we assume that there is one class of individuals (i.e, class=1 and gclass=1). Standard errors in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A3: Remittance dependence, support for taxation and public services quality (second and third best models)

Dependent variable: Probability to support taxation	Second best model (g=5, k=2)		Third best model (g=3, k=2)	
	Class1 (π_1=76.6%)	Class2 (π_2=23.4%)	Class1 (π_1=68.1%)	Class2 (π_2=31.9%)
Remittance dependent	-0.0355	-0.1042	0.771	-0.2804
	[0.2144]	[0.049]**	[0.2744]***	[0.0871]***
Female	0.0335	-0.1344	-0.0095	-0.1838
	[0.1695]	[0.0423]***	[0.1434]	[0.0696]***
Some primary education	-0.3324	0.1513	-0.0403	0.1139
	[0.2684]	[0.0756]**	[0.2272]	[0.1327]
Primary education completed	-0.3649	0.3732	-0.2202	0.4851
	[0.2439]	[0.0697]***	[0.2118]	[0.1226]***
Secondary education	0.0181	0.3945	0.1737	0.5095
	[0.4257]	[0.0825]***	[0.3254]	[0.1407]***
Post-secondary education	0.3658	0.5434	0.6084	0.6648
	[0.5171]	[0.0855]***	[0.4142]	[0.1441]***
Age (18-25)	0.3372	-0.2506	0.3749	-0.4261
	[0.2381]	[0.0535]***	[0.1861]**	[0.1003]***
Age (26-35)	0.0984	-0.1327	0.3261	-0.2752
	[0.2022]	[0.0502]***	[0.1762]*	[0.0873]***
Urban	1.3897	-0.0413	0.3362	-0.0068
	[0.3621]***	[0.0457]	[0.1713]**	[0.0715]
Access information	-0.4978	0.2309	-0.6103	0.515
	[0.2907]*	[0.0709]***	[0.2392]***	[0.1455]***
Employed	0.1431	0.0157	-0.251	0.1237
	[0.2177]	[0.0519]	[0.1907]	[0.0858]
Unemployed	0.5181	-0.0671	0.1098	-0.0226
	[0.3251]	[0.0542]	[0.2149]	[0.0901]
Corruption tax officials	1.0755	-0.3604	0.0258	-0.3535
	[0.4138]***	[0.068]***	[0.2383]	[0.113]***
Poverty index	-0.2972	-0.2545	-0.3524	-0.3846
	[0.1272]**	[0.0283]***	[0.1069]***	[0.0648]***
GDP/Capital (logs)	5.9118	-0.2828	3.7512	-0.4982
	[1.0296]***	[0.0411]***	[0.3686]***	[0.0793]***
Remittances/GDP (logs)	2.5911	-0.0803	0.6159	-0.0545
	[0.3599]***	[0.0226]***	[0.1218]***	[0.0312]*
OECD income tax/GDP(logs)	26.7813	0.2347	-2.5382	2.8582
	[5.1797]***	[0.3607]	[1.8256]*	[0.5633]***
Control Corruption	-2.6299	0.7298	-1.1821	0.4931
	(0.7184)***	(0.0801)***	[0.2675]***	[0.0981]***
dyear6	2.4863	-0.2086	0.2358	0.0237
	[0.5499]***	[0.114]*	[0.3061]	[0.1927]
dyear7	12.7199	0.2992	8.2188	0.3769
	[4.7442]***	[0.1028]***	[4.5954]*	[0.1785]**
Intercept	-116.2379	1.7091	-21.1831	-4.2434
	[20.9426]***	[0.9018]*	[3.9542]***	[1.3657]***
Concomitant variable				
Quality of public services		-0.3661		-0.3272
		[0.0437]***		[0.0374]***
Total number of observations	42521		42521	
Total number of countries	34		34	

Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

The UNU-MERIT WORKING Paper Series