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Konte, Maty; Ndubuisi, G.O.

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RESEARCH ARTICLE

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

Maty Konte¹  and Gideon Ndubuisi^{2,3}

¹World Bank/International Finance Corporation, Washington, DC, USA, ²Delft University of Technology, Delf, The Netherlands and ³UNU-MERIT, Maastricht University, Maastricht, The Netherlands

Corresponding author: Maty Konte; Email: mkonte@ifc.org

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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 remittance dependency. We apply the finite multilevel mixture of regressions approach, a supervised machine learning method to detect hidden classes in the data without imposing *a priori* assumptions on class membership. Our data are best generated by an econometric model with two classes/subtypes of individuals. In class 1 where more than two-thirds of the citizens 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. Furthermore, 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 in which depending on remittance reduces support for taxation. The findings emphasize the need for efficient public services provisioning to counteract the adverse effect of remittances on tax morale.

Keywords: Africa; public services; remittance; tax morale; taxation

JEL: D01; H41; O55

Introduction

Amid the steady rise in migrant remittance over the past few decades in low- and middle-income countries (see World Bank, 2019), an enormous body of literature examining their potential economic effects on the recipient countries has emerged. Scholars have also examined how migrant remittance leads to behavioural changes of those left behind, including political and social behaviours (Adida and Girod, 2011; Chauvet and Mercier, 2014; Escriba-Folch *et al.*, 2018; Germano, 2013; Konte, 2016; Mitra *et al.*, 2021; Tyburski, 2012, 2014) and more recently on tax compliance behaviours (López García and Maydom, 2021, 2023). 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 in the literature is that remittance weakens the state–citizen relationship as the additional income empowers remittance recipients to enter the private market and substitute state provisions. Besides this supposed income or substitution effect 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, remittance may serve 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 (Batista *et al.*, 2019; Konte and Ndubuisi, 2020; Levitt, 1998).

In this paper, we examine whether behaviours related to support for taxation are among the attitude dimensions affected and shaped by remittance dependency. We make two notable deviations from the previous literature, especially López García and Maydom (2021, 2023) which is to our best knowledge the only study that looks at the relationship between remittance and support for taxation. First, in contrast to López García and Maydom (2021, 2023) that investigate how the effect of receiving remittance on support for taxation varies with selected individual socioeconomic and political characteristics, we examine the heterogeneous effect of remittance dependency on citizens' support for taxation across latent classes/subtypes of individuals that we identify endogenously without *ex-ante* class membership. Specifically, we relax the hypothesis that all citizens behave similarly and 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. Our approach is similar to Konte (2016) which examined the heterogeneous effect of remittance although focusing on support for democracy.

As our second contribution, we explore how a citizen's valuation of public services may determine which class/subtype a remittance dependent belongs to. In this way, we provide evidence on how a valuation of public goods and services alters the relationship between remittance dependency and support for taxation. Our motivation for this analysis draws from the psychological tax contract thesis and Wicksell's Voluntary exchange theory. These theories argue 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 Christian, 1978; Feld and Frey, 2007; Musgrave, 1939). 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 and Asparouhov, 2009), a semiparametric and supervised machine learning method that detects hidden classes in the data without *a priori* assumptions on class/subtype membership or how remittance dependency affects support for taxation across the classes. The method, thus, provides greater flexibility than *ad hoc* approaches that split samples based on *a priori* criteria. It also accounts for the hierarchy structure of the data and has been extensively explored elsewhere in the literature to endogenously identify hidden classes/subtypes of individuals that may exist in survey data (Anderson *et al.*, 2018; Deb and Trivedi, 1997; Flunger *et al.*, 2019; Henry and Muthén, 2010). 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 are 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 remittance 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 and Maydom (2021), 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.

This paper is related to the broader 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 behaviours of those left behind. It also includes studies that have more broadly examined the effects of (e)migration along the same lines. Regarding the latter, extant studies have, among others, examined how migration leads to civic engagement (Nikolova *et al.*, 2017), transfer of gender and fertility norms (Bertoli and Marchetta, 2015) and bribe payment (Ivlevs and King, 2017). This paper also 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 (Allingham and Sandmo, 1972),¹ advances in the literature have also underscored the pivotal role of non-pecuniary factors such as personal and social norms (e.g. see Kountouris and Remoundou, 2013; Traxler, 2010; Wenzel, 2005),² quality of public goods or governance (Ali *et al.*, 2014; Boly *et al.*, 2021; Fjeldstad and Semboja, 2001; Kogler *et al.*, 2015; Lago-Penas and Lego-Penas, 2010; Russo, 2013) and social and demographic factors (e.g. see Alm and Torgler, 2006; Martinez-Vazquez and Torgler, 2009; Rodriguez-Justicia and Theilen, 2018).³ Our paper contributes to this literature by showing how external factors can interact with domestic factors to induce tax-behavioural changes.

The remainder of the paper is organized as follows. Section 2 describes different ways dependence on 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.

How tax morale is related to remittance dependency

A consensus in the literature examining how migrant remittance affects the political behaviours of those left behind is that dependence on migrant remittance significantly affects the recipient’s political behaviour. One of the causal pathways is predicated on the presumption that dependence on migrant remittance weakens the efficacy of vote buying as the additional income it raises the recipient’s income and lowers the marginal utility of targeted electoral transfers (Ahmed, 2017).⁴ Ultimately, this undermines the remittance recipient’s predilection for political engagement. Goodman and Hiskey (2008) provide evidence in support of this view. Using a municipal and individual-level data from Mexico, they found that high migration municipalities exhibit lower voter turnout rates, while individuals in high migration areas report lower levels of political efficacy as well as participate less in politics. Similar evidence has also been documented by López García (2017, 2018).

While the foregoing is suggestive that migrant remittance results in political apathy among remittance dependents, the additional income migrant remittance brings also makes the recipient wealthier. Hence, migrant remittance dependents may have relatively fewer economic grievances and hold a more positive view of current economic conditions which they attribute to the incumbent’s favourable performance.⁵ This view has received empirical support from Germano (2013) who found that individuals who depend more on remittance were less likely to lobby officials for economic assistance and

¹Examples of factors include the tax rate, audit probability and the penalty.

²Personal 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.

³Examples here include marital status, income level, employment status, education and gender.

⁴Another possible causal pathway explaining the relationship between remittance dependency and political behaviour is that more liberally minded, politically active people are more likely to migrate (see e.g. Anelli and Peri, 2017).

⁵This view is consistent with the economic voter thesis, which suggests that citizens who are more satisfied with the economy are also less likely to pressure and oppose politicians, particularly incumbents (see Germano, 2013).

consequently less likely to punish the incumbent party in elections for poor economic performance. A study by Ahmed (2017) based on a sample of Latin American countries also showed empirically that at increasingly higher levels of dissatisfaction with the incumbent, a remittance dependent is more likely to vote for the incumbent.

One of the recurring arguments in the above literature is that migrant remittance dependents rely less on government goods and patronage because the remittance empowers them to enter the private market and substitute state provisions. This underscores two causal remittance effects *vis-à-vis* the income effect and substitution effect that are often discussed in the literature (see Acevedo, 2020; Duquette-Rury, 2014; López García and Maydom, 2021, 2023). On the one hand, the income effect is associated with an increase in the consumption level of remittance dependents due to the general income increase remittance brings. In this case, the recipient begins to demand those goods and services [s]he wasn't demanding before and is able to easily afford the private goods alternative. The substitution effect, on the other hand, is associated with the remittance dependent's changes in consumption pattern or preferences (such as a change from preferring lower- to higher-quality goods and services) that are induced by the additional income embodied in remittance. In this case, the additional income remittances enable remittance dependents to substitute public goods and services with private alternatives they believe are of better and higher quality. These factors put together underscore a widely held view in the literature that individuals and households in developing countries use migrant remittance to access both basic and public utilities (e.g. food, shelter, security, sanitation, water, electricity, education and roads) in the private market (Adida and Girod, 2011; Doyle, 2015).⁶ In the case of public utilities, remittance dependents become self-providers of public goods and services, and therefore more autonomous from (or less dependent on) the state (López García and Maydom, 2021, 2023: 1351).

In line with the foregoing, we conjecture that migrant remittance can also affect the tax morale of individuals that depend more on remittance through a substitution effect. Tax morale is the intrinsic motivation to pay tax, and it has been argued to have a stronger and sizeable role in explaining tax compliance behaviours (Luttmer and Singhal, 2014). One of the long-standing views in the public finance literature is that the quality and quantity of public goods provisioning are important determinants of tax morale. This view is formally enshrined in the psychological tax contract thesis by Feld and Frey (2007) or Wicksell's voluntary exchange theory, which posits that taxes are voluntary payments by individuals in exchange for public goods and services (Christian, 1978; Musgrave, 1939).

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 and Frey, 2007) such that 'while the government taketh away, it also giveth' (Alm *et al.*, 1992), and breaking this contract creates a vicious circle (Hug and Spörri, 2011). Against this backdrop, migrant remittance allows recipients greater access to the private market alternatives to public goods and services and would in turn affect their predisposition to pay tax.

The negative effect of migrant remittance on tax morale via the substitution effect is further exacerbated by the fact that it can incentivize policymakers to decrease public spending or divert resources away from citizens. The small increases in remittance 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 remittance income makes remittance receivers reluctant in holding the government accountable because it makes political patronage less costly for them to bear (Ebeke, 2012).⁷

⁶It may also well be that they use it for bribe payment to access public services. In line to this, a recent study by Konte and Ndubuisi (2020) showed among others, that remittance receivers are more prone to bribe payment than non-receivers.

⁷The latter is often referred to as public moral hazards (see Ebeke, 2012). Moreover, Abdih *et al.* (2012) also note that while remittance is 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.

This view is also in line with the literature showing that remittance reduces government spending as well as deteriorates governance (Abdih *et al.*, 2012; Ahmed, 2013; Doyle, 2015). Consistent with the ‘psychological tax contract thesis’ or the ‘voluntary exchange theory’ espoused above, this will negatively reduce the tax morale of citizens. Moreover, an existent literature indicts such reduction in government spending and bad governance as causes of lower tax morale (see Boly *et al.*, 2021; Kogler *et al.*, 2015; Lago-Penas and Lego-Penas, 2010).

The foregoing discussions, therefore, lead to the following hypothesis:

H1: The tax morale of individuals is negatively affected if they are more dependent on migrant remittance.

The negative effect of migrant remittance on tax morale hinges on the implicit presumption that public goods and services are underprovided either in quantity or quality such that migrant remittance offers an opportunity of a substitute. The question then that emerges is what happens when public goods and services are adequately provided, and the quality of governance is good? In this case, the additional income embodied in migrant remittance may still induce a substitution from public goods and services to their private alternative. However, this will be for other reasons, such as the ‘positional’ value of the private goods and services as consuming them signals status, wealth or success. Furthermore, the additional income can be channelled to strictly private goods and/or private investments. Other things equal, therefore, we expect the tax morale of the remittance dependents with positive valuations about the quality of public goods and services to be unaffected as such income effect is only expected to increase consumption of private goods and drive private investments. Conversely, we expect migrant remittance to negatively affect the tax morale of remittance dependents with negative valuations about the quality of public goods and services because they use remittance to self-provide for themselves these public goods and services. The foregoing argument is consistent with the public finance literature, which highlights citizens’ discontent with public goods and service delivery as one of the prominent factors that increase tax resistance and widespread tax evasion (Ali *et al.*, 2014; Fjeldstad and Semboja, 2001; Russo, 2013). This leads to the following hypothesis:

H2a: The tax morale of migrant remittance dependents is unaffected if they have positive valuations about the quality of public goods and services.

H2b: The tax morale of migrant remittance dependents is negatively affected if they have negative valuations about the quality of public goods and services.

Finally, it is worth noting that while the preceding hypotheses focus largely on the substitution/income effect, migrant remittance can also affect the tax morale of remittance dependents through the ‘norms-transfer’ channel as espoused in the introduction. As we do not have the requisite data to test this causal pathway, we do not provide hypothesis for them.

Data description

Our empirical analysis primarily depends on the Afrobarometer data, which contain 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 behaviour 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 remittance. Rounds 4 and 6 will be used to assess the robustness of the results as they only inform whether the respondents received remittance but does not necessarily inform how dependent the respondents are on receiving remittance.

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

Table A2⁹ in the online appendix 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 remittance. On average, around 21% of the people interviewed reported being dependent on remittance in the full sample. However, we observe some heterogeneity across the countries. For example, Gambia has the highest proportion of people who depend on remittance, with a percentage of 47%. It 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 remittance, followed by Tanzania, with a proportion of around 9%, and Mauritius, with 12%. We also report in Table A2 the amount of remittances as a share of GDP in the countries. We observe that countries that have remittance inflows representing more than 10% of their GDP have at least 20% of their respondents depending on remittances. These countries include Liberia, Senegal, Cape Verde, Lesotho and Gambia.

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. Table A3 shows the distribution of the respondents into these three categories: ‘agree/strongly agree’, ‘neutral’ and disagree or ‘strongly disagree’. As shown in Table A3, around 75% of the respondents agree or strongly agree that people must pay taxes, while there is 20% of people who disagree or strongly disagree with this statement. The remaining 4% of the respondents neither 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 (38%) of people 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 for our analysis are 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. We 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 this end, we rely on the questions of the survey that ask the respondents how well or badly they think their government handles the following matters: health, educational needs, the provision of water, sanitation services and electricity supply. In Table A4, we show for each of the public services the proportion of people that have a positive appraisal about how their governments handle the matter. Overall, about 54% of the respondents 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

⁸We code missing values for the respondents who refused to respond or provided the response ‘I do not know’.

⁹Online Appendix accessible through one of the links below

https://drive.google.com/file/d/1N1A1hwiU_Ra_baIffIMfSkAe-pUGw4SV/view?usp=share_link

<https://www.dropbox.com/scl/fi/t3lezql1ictmj4subabcm/Online-Appendix-1.pdf?rlkey=hdiwyk1c0fn66779mvdxjvyu&dl=0>

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. Finally, we also create an index based on how many of the public services a respondent holds a positive appraisal about.

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. The inclusion of these variables is primarily motivated by the extant literature on the drivers of tax morale (see Ali *et al.*, 2014; Alm and Torgler, 2006; Boly *et al.*, 2021; Fjeldstad and Semboja, 2001; Kogler *et al.*, 2015; Kountouris and Remoundou, 2013; Lago-Penas and Lego-Penas, 2010; Martinez-Vazquez and Torgler, 2009; Rodriguez-Justicia and Theilen, 2018). Because some of these additional controls may be correlated with the two variables of interest – remittance dependency and quality of public services – their exclusion may induce omitted variable bias. For instance, urban dwellers tend to have higher tax morale, but at the same time have better access to quality public goods and services. An individual's employment status as well as poverty level are also strong determinants of the person's tax morale, but also correlated with whether the person will depend on remittance as a sole source of income (Acevedo, 2020). Therefore, the omission of the urban variable could confound the effect of quality of public services we document, while the omission of poverty level and employment status could confound the effect of remittance dependency. We also control for 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.¹⁰ The inclusion of the country-level variables enables us to isolate the effect of the variables of interest from these country-specific confounding factors.

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 remittance 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 (Henry and Muthén, 2010; Muthén and Asparouhov, 2009). The approach 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. The latent classes are defined by qualitative differences in the relationship between tax compliance and all the control variables, including remittance dependency. 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

¹⁰We 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 and Cohen (2019).

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 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 and 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:

$$f(T|R, \omega, \theta) = \prod_{j=1}^n \left[\sum_{l=1}^L \pi_l(gclass_j = l) \left[\prod_{i=1}^{n_j} \sum_{k=1}^K \pi_{ijk}(class_{ijl} = k | gclass_j) \right] \right. \\ \left. \times P(T_{ij} = 1 | class_{ijl} = k, R_{ij}, \omega_{ij}, \theta) \right] \tag{1}$$

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. $\pi_{ijk}(class_{ij} = k | gclass_j)$ 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 $\pi_l(gclass = l)$. For each individual, the sum of the estimated probabilities to belong to the different classes is equal to 1. The component $P(T_{ij} = 1 | class_{ij} = k; R_{ij}, \omega_{ij}; \theta)$ 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 $\pi_{ijk}(\cdot)$ by defining it as a function of variables commonly named concomitants which help to explain inter class heterogeneity. In this paper, the concomitant variables are the variables that capture the respondents’ appraisal of how their governments handle public services such as water and 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):

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

Vector θ includes the parameters on the explanatory variables, including dependence on remittance, 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-level 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, higher number of parameters to estimate more data is 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 encounter serving convergence issues or observe 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.¹¹

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 fits the data. The lower are these statistics greater is the goodness of fit.

Estimation results

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- 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 1 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 three statistic criteria, indicating that this model has the lowest goodness of fit. 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 A5¹² 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 and Maydom (2021, 2023) that shows a negative relationship between receiving remittance and support for taxation. But because this model has the lowest goodness of fit, we confidently suspect that there is unobserved heterogeneity in the data that needs to be addressed to best estimate the effect of dependence on remittance on support for taxation.

In the rest of Table 1, 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 two distinct latent classes/subtypes at the individual level and four 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 two latent classes at the individual level is superior to any other models with more than two classes. This result confirms Konte's (2016) findings, who also detected two classes in the relationship between receiving remittance and support for democracy in Africa.

¹¹For 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.

¹²Online Appendix accessible through one of the links below

https://drive.google.com/file/d/1N1A1hwiU_Ra_baIffimfSkAe-pUGw4SV/view?usp=share_link

<https://www.dropbox.com/scl/fi/x2msc9qq32t8741rbpuap/Online-Appendix.pdf?rlkey=1kk7m1grrddoj8mtepl3pgtwu&dl=0>

Table 1. Goodness of fit of the multilevel mixture models

Class	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.

Remittance dependency and support for taxation across the two classes

Table 2 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 most 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 dependents in that class are as likely as non-dependents to either support or not support taxation. In class 2, however, remittance dependents are more likely to have lower support for taxation than non-remittance dependents. This result corroborates the idea espoused in section 2 that remittance allows individuals to substitute public goods and services with private ones, leading to a reduction in the tax morale of remittance dependents than non-dependents because the latter may not have the opportunity to access private goods and services.

Keeping all the additional control variables constant, the estimated odds ratio of a remittance dependent over a non-remittance dependent in class 2 is lower than one and equal to 0.9.¹³ This indicates that the likelihood of being tax compliant is reduced by 10% for a remittance dependent that belongs to class 2. In class 1, even though the estimated coefficient on remittance dependent is not statistically significant, the odds ratio is higher than 1 with a value of 1.01, meaning that a remittance dependent that belongs to this class is 1% more likely to be tax compliant than a non-remittance dependent.

Looking at the other control variables, the effect of gender is only statistically significant in class 2 where being a female decreases support for taxation. Education only matters in class 2 where an increase in the level of education is associated with higher support for taxation. 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.

To date, extant studies are yet to consider the heterogeneous effects of these conventional drivers of tax morale across latent classes/subtypes of individuals. However, the results on the control variables show that the effects of most of these variables vary across latent classes/subtypes of individuals. For instance, consider the effect of gender, which is only statistically significant in class 2 where being a female decreases support for taxation in this class. This result is inconsistent with 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 and Torgler, 2006; Torgler and Valev, 2010). Yet, it is important to highlight that these studies, unlike in our analysis, do not consider its heterogeneous effect across latent classes/subtypes of individuals. The differences in the results are therefore explained by this source of heterogeneity. Along this line, the result on gender in class 2 is very informative if we consider that females are more negatively affected by poor provision of the public goods and services that we identified as significant determinants of class membership. In fact, the result on gender in class 2 shows that females who are less satisfied with the quality of public goods and services are less likely to support tax than their male counterpart. Conversely, the result on gender in class 1 shows that there is no statistically significant difference in the support of taxation among men and female who feel equally satisfied with the quality of public goods and services.

¹³The odds ratio is computed by taking the exponential of the estimated coefficient on remittance dependency reported in Table 5. We then subtract the odd ratio from 1 to measure the percentage change of the likelihood of being tax compliant for a remittance dependent.

Remittance dependency and support for taxation: the role of the quality public services

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 2. 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 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. Our result suggests that, other things equal, if 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. Keeping everything else constant, the value of the odd ratio of belonging to class 2 over class 1 indicates that having a positive valuation of the quality of public services decreases the probability of belonging to class 2 by 33%.

In Table 3, we further show the descriptive statistics of the remittance dependency, 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 percentages of respondents who depend on remittance 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 4 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 eight out of the 34 countries in our sample have more than 50% of their respondents belonging to class 2. There are seven countries that have all their citizens having a higher probability to be in class 2. These countries are Benin, Cote d'Ivoire, Niger, South Africa, Sudan, Togo and Morocco.

Table 5 shows the distribution of how people evaluate the quality of public services across the two classes. 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 2. Sixty-six per cent 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 remittance 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.

Robustness checks

In this section, we subject our analysis to a battery of sensitivity checks to ensure the robustness of our results. Table A6 in the appendix reports the estimation results for the second and third best models.

Table 2. Remittance dependence, support for taxation and public services quality (glass = 4, class = 2)

	Class 1	Class 2
Dependent variable: probability to support taxation	($\pi_1 = 62\%$)	($\pi_2 = 38\%$)
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]

(Continued)

Table 2. (Continued.)

	Class 1	Class 2
Dependent variable: probability to support taxation	($\pi_1 = 62\%$)	($\pi_2 = 38\%$)
Intercept	-134.4273***	4.6005***
	[23.2074]	[0.7662]
<i>Concomitant variable</i>		
Quality of public services (good)		-0.4003***
		[0.0528]
Number of observations	42,521	
Number of countries	34	

Notes: This table shows the results of the selected model in bold in Table 1. The dependent variable is the probability to agree that a citizen must pay taxes. Standard errors in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Year and country fixed effects are included in the model.

Table 3. Descriptive statistics by class

	Class 1	Class 2	(Class 1-2)
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

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 results, we also find that a positive assessment of the quality of public services decreases the probability to belong to the second class.

Table 4. Percentage of respondents by country sorted in class 2

Country	Share of respondents with higher probability to be in class 2 (%)
Benin	100
Botswana	10.62
Burkina Faso	41.87
Cameroon	29.90
Cape Verde	99.91
Cote d'Ivoire	100
Eswatini	18.25
Gabon	26.39
Gambia	8.70
Ghana	10.42
Guinea	2.07
Kenya	22.11
Lesotho	29.11
Liberia	10.66
Madagascar	33.85
Malawi	38.36
Mali	15.09
Mauritius	27.05
Morocco	100
Mozambique	33.15
Namibia	25.94
Niger	100
Nigeria	27.30
Sao Tome and Principe	12.08
Senegal	19.47
Sierra Leone	5.26
South Africa	100
Sudan	100
Tanzania	9.89
Togo	100
Tunisia	21.57
Uganda	13.68
Zambia	12.96
Zimbabwe	14.47

Next, we probe whether some of the public services are more important than others in explaining the classification of the respondents across the two classes. The results of this exercise are reported in Table A7 where we estimate six different models. In model 1, we jointly include all the measures of

Table 5. 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.

public services as concomitant variables.¹⁴ 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. As per the concomitant variables, the estimated coefficients of all 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 significantly decreases the likelihood of being a subtype 2 citizen. In models 2–5, 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 we consider. Finally, model 6 shows the results where we use an index measure of public services as a concomitant variable. Again, the findings are consistent with those obtained using a binary variable to measure satisfaction with public goods and service provision.

In our baseline model, the remittance dependency variable is dichotomous where 0 is coded for people who do not depend on remittance and 1 for respondents who depend on remittance regardless of the extent to which they depend on remittance. 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 remittance, 1 for those who depend on remittance but just a little and 2 is allocated for all the other respondents that depend somewhat or a lot on remittance. Hence, a higher value means a higher dependence on remittance. Table 6 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 significantly decreases the probability to be in class 2 where remittance dependency reduces support for taxation.

Although we focus on the quality of public services which fits into the psychological tax contract or voluntary exchange 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, poverty index and institutional trust (i.e. trust in the president, parliament and local councillors).¹⁵ This exercise also enables us to ascertain that the effect of quality public services is not confounded by other factors that could serve as potential concomitant factors. The results are reported in Table A8. Although we observe a drop in the size of the coefficient on quality public services from its previous value of 0.40 in Table 2 to 0.23 in Table A8, the coefficient remains significantly negative at the 1% significance level. Hence, the result confirms our baseline findings where the quality of public services is an important determinant of the classification of the observations across the two classes. In this case, we are confident that the effect of perceived quality of public services as a determinant of class membership where remittance dependency reduces support for taxation is not confounded by other factors such as perceived level of corruption, institutional trust and demographic and socio-economic factors that may serve as potential concomitant factors.

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 remittance in the past 12 months.

¹⁴Note that all the individual- and country-level variables that were controlled in the previous Table 5 are also controlled across all the estimations in Table 6 but not reported here.

¹⁵As discussed in section 4 on empirical strategy, our model also includes country-level group dummies to determine class membership. These dummy variables may capture some of the country-level features. However, we encountered convergence issues when we added the country-level concomitant variables with the country-group dummies. This technical issue could be explained by the fact that there is a collinearity issue between the group dummies and the country-level variables.

Table 6. Remittance dependence (ordinal variable), support for taxation and public services quality

	Class 1 ($\pi_1 = 67.8\%$)	Class 2 ($\pi_2 = 32.2\%$)
Remittance dependence (ordinal:0–2)	0.144 [0.1123]	–0.0849*** [0.0342]
<i>Concomitant variables</i>		
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 brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Unlike round 7, these two rounds do not allow an assessment of whether the respondents depend on remittance. We argue that the number of times a person receives remittances does not necessarily reflect how the person depends on remittance. In fact, some people may receive remittances frequently but with a small 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 findings are consistent with the baseline results (see Table A9). Particularly, we find that in the first class, receiving remittance does not have a significant effect on support for taxation, while in the second class, it reduces the probability of having 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 5 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.

Finally, 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. Therefore, we do not interpret our results as causal. However, the mixture of regressions model is implemented to correct or reduce significantly unobserved heterogeneity that could bias the results. Individuals who 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.

Conclusion

How migrant remittance shapes the behaviours 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 extended this literature in this paper by examining whether attitudinal change associated with the support of taxation is also affected by migrant remittance. We also examined how an individual's valuation of the quality of public services shapes such a relationship. We addressed 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 are 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 38% of the observations show a significant negative effect of dependence on remittance on support for taxation. Interestingly, the 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 remittance 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 remittance 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 *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, therefore, 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 remittance 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.¹⁶ 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 remittance on government revenues, while preserving these positive gains derived from migrant remittance.

The empirical analysis conducted in this paper appeals strongly to the income effect channel which we espoused in the conceptual framework section. However, migrant remittance may also affect the tax morale of the receiver via the 'norm-transfer channel'. Levitt (1998) introduced the concept of social remittance, arguing that in addition to financial transfers, remittance serves as a conduit of norm transfers from migrants' host countries to migrants' countries of origin. This can occur directly, say when the migrant inveigles their loved ones to comply with certain norms and beliefs by withholding transfer, or indirectly through social learning. Tax (non-)compliance behaviours could be among the norms that are internalized by migrants and transferred to their home country. 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.

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¹⁶See Bedi *et al.* (2023) and Zhunio *et al.* (2012) among others.

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