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Working Paper 149

Growth or Goods: Examining Tax Morale
Among Property Owners in Lagos

Nicole E. Wilson and Leah R. Rosenzweig

October 2022

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Nicole E. Wilson and Leah R. Rosenzweig

Summary

What motivates property owners to pay taxes in places where state enforcement is weak? Using an online experiment among property owners in Lagos, Nigeria, we evaluate the extent to which different appeals increase respondents' tax morale, their willingness to pay taxes if there is no enforcement, and attitudes about government enforcement of tax collection. Respondents were randomly assigned to read either a vignette emphasising the role of property tax revenue in contributing to economic growth and increased property values, or one highlighting that tax revenue is used for public goods and services benefiting all residents. The growth message made respondents significantly more favourable towards enforcement of tax collection, but there was no difference in willingness to pay between the two treatment conditions. We also look at heterogeneity across class identification and attitudes toward redistribution, and find that support for a more equal society reduces the advantage of the growth appeal.

Keywords: tax morale; enforcement; public services; property values; survey experiment; Lagos; Nigeria.

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Acronyms

LOLA	Lagos On-Line Assistant
LUC	Land Use Charge
VAT	Value added tax

Introduction

Property taxes provide an opportunity for sustainable revenue for local governments around the world. However, property taxes are under-utilised in sub-Saharan Africa, and have only recently become a priority for governments in the region and the international donor community (Moore et al. 2018). In 2019, on average property taxes made up only 1.9 per cent of total tax revenue across Africa, about one-third of the OECD average (OECD/AUC/ATAF 2021). Property taxes are generally progressive since they extract wealth from those with a certain level of assets, making them an attractive way to help address inequality – as opposed to taxes on consumption, such as value added tax (VAT). Property taxes are also desirable because they are a tax on wealth rather than income, and entail fewer concerns about discouraging productive activity (Collier et al. 2017). They are a highly predictable and reliable source of revenue, as land and buildings are immovable property that will stay within a given jurisdiction (Monkam and Moore 2015). While enforcement is one way of encouraging citizens to pay, most governments rely on some degree of citizens' voluntary compliance to obtain tax revenue (Alm et al. 1992). But what drives citizens' willingness to pay taxes – also known as 'tax morale'?

Many theories of tax morale are rooted in fiscal exchange theory. This suggests that citizens pay taxes in exchange for government provision of desired infrastructure and services (Alm et al. 1993). These theories rarely specify a particular type of tax. Yet different types of taxes target different tax bases – each of these may have a unique set of political preferences that affect how individuals evaluate state service delivery and subsequently decide whether to comply with tax payment. Moving beyond the question of whether public services can motivate tax payment, we explore **why** services are valued by taxpayers. Property owners – those liable to pay property tax – may have distinct priorities when evaluating delivery of government services. Research from high-income countries highlights the priority that homeowners place on maximising their property values (Fischel 2001; McGregor and Spicer 2016; Fischel 2005). The way that these constituents engage with politics – such as whether and how to vote – is therefore driven by a demand for government policies that improve, or at least preserve, the value of their greatest asset, their home. Although much of the existing literature on the political behaviour of homeowners is about voting, this paper focuses on how those most likely to have an interest in property values (e.g. property owners) might be differentially motivated to pay taxes.

Many governments actively try to connect service delivery with tax payment in order to motivate compliance. But what types of messaging about service delivery work best to motivate tax morale among property owners? In particular, does pointing out the connection between services and the value of their property instill a more positive attitude towards property taxes? And do different appeals work better for different types of property owner?

We study these questions using data from a survey experiment with over 4,000 property owners in Lagos, Nigeria recruited online via Facebook. Lagos is a particularly good context in which to explore these dynamics, and is often highlighted as a successful example of expanding and improving tax collection (de Gramont, 2015; Cheeseman and de Gramont 2017). However, gaps in compliance, and taxpayers who are not convinced of the benefits of paying their property taxes, still exist. Increasing voluntary compliance would help to reduce enforcement costs. Like many governments, Lagos is already acting on the assumption that citizens can be motivated to pay their taxes by appeals that refer to the delivery of state services made possible by tax revenue.¹

¹ For instance, this was a key talking point when responding to the controversy instigated by the 2018 property tax rate

In order to test how state investment in services affects tax morale among these property owners, we make salient different benefits of a government road project – improving the quality of life for all residents, or having a positive impact on the value of the owners’ property. Holding the type of good (service provided, i.e. road) constant while varying the explicit connection to serving a whole community or increasing property values in a survey experiment provides causal evidence on how making one type of tax benefit (public services) more prominent than another (economic growth) influences respondents’ tax morale. Although we do not observe tax compliance directly, we look at a set of key attitudes related to tax morale.

We find that providing any information about the use of tax revenue on road improvement is associated with an increase in willingness to pay taxes and support for tax enforcement, as well as the expectation that other community members will be more willing to pay, relative to pre-treatment measures. Further, highlighting the benefit of the road for economic growth leads to more support for government enforcement of property tax payment than framing the road as a public benefit for the whole community. There is evidence suggesting that this is driven by respondents who are reminded of the connection between building the road and economic growth believing that the project would benefit property owners more than tenants. Finally, we find that the difference between the treatment conditions depends on respondents’ attitudes towards redistribution. Respondents who support more equality in a society at baseline show no significant difference in their tax attitude, whether they are told the road increases economic growth or serves the whole community.

These findings suggest that, to increase tax compliance via an increased willingness to pay taxes among property owners in Lagos, the government should, first, make the connection between tax revenue and development projects more prominent, and, second, emphasise how these improvement projects contribute to local economic growth. However, the effectiveness of this specific growth-based appeal depends on an individual’s pre-existing preferences with respect to equality and redistribution. Hence, targeted messaging – often using online advertisements on social media platforms – may be important in future campaigns to increase voluntary tax compliance. While this study tests two different appeals, future research should explore additional areas of heterogeneity among property owners. This will help to understand better the limits of theories assuming a singular focus on increasing property values that drive different forms of political behaviour, including paying taxes.

This paper proceeds as follows. First, we review the literature on tax morale, the political behaviour of homeowners, and how class and ideology might influence which type of appeal works best. Then, we provide an overview of our case context and methodological approach, including findings from the preliminary focus groups that informed our research design, our sampling strategy and sample characteristics, and measurement choices. We then discuss the results from our survey experiment, and explore heterogeneous treatment effects. We conclude by summarising the implications of our findings, reviewing limitations, and making suggestions for policy priorities and future research.

increase. See: <https://www.vanguardngr.com/2018/03/review-lagos-land-use-charge-interest-public-bamigbetan/>.

1 Literature review

1.1 Explaining tax morale

Early models of tax compliance focused on the expected cost of evasion relative to one's tax burden. In short, people should only pay if enforcement is severe or frequent enough that the expected cost of not paying is greater than the cost of paying (Allingham and Sandmo 1972). It is now widely recognised, however, that rates of tax compliance are higher than theories of state enforcement alone predict. To explain this puzzle, the concept of tax morale is often used to describe the residual, and typically intrinsic, reasons one might be willing to voluntarily pay taxes, even when enforcement is unlikely (Luttmer and Singhal 2014; Torgler 2002). Much of the literature on tax morale focuses on the fiscal contract between citizens and the state, in which citizens' tax compliance is exchanged for satisfactory government services.

Evidence of the existence of this type of fiscal contract in Nigeria is mixed. Using survey data from across Nigeria, McCulloch et al. (2021) find no relationship between citizens' experience with public services and their attitude towards taxation. Similarly, Goodfellow and Owen (2020) find in interviews with residents of Lagos – both rich and poor – that they do not readily associate property taxes with improved infrastructure and services.² By contrast, Bodea and LeBas (2016) find that in urban areas in Nigeria those who use public goods and services more frequently have higher levels of tax morale than those with greater access to privately-provided goods, which substitute for state provision.

Gatt and Owen (2018) consider how self-employed professionals and market traders in Lagos experience the state and taxation differently. Focusing on income tax, they find that professionals are more likely to demand better services and more transparency from the government if they pay taxes. Traders also value services, but instead see taxation as a more personal arrangement with the governor. However, the authors also find that, despite their demands for improved service delivery, professionals are less likely than market traders to personally use public services such as schools and hospitals, opting instead for private alternatives. While the professionals made less use of public services, they still wanted them to be provided. This suggests that, even if tax payment is rooted in a fiscal contract, the specific terms of the fiscal contract can differ across groups in society.³

1.2 A fiscal contract for homeowners?

When investigating the terms of the fiscal contract for property owners specifically, we should consider how this population might have unique preferences about public investment that influence their willingness to pay taxes. There are two channels through which public investment could benefit property owners. First, there is the **use value** – a well-paved road outside one's home makes it easier to come and go by car. However, public investment can also increase the **exchange value** of the property – its value on the market. A well-paved road can allow an owner to charge higher rents, or make more when selling.

The voting behaviour of homeowners in the US often reflects a desire to protect the value of their home (Trounstine 2018; Fischel 2005). Even homeowners without school-aged children

² They explicitly contrast this with income tax, for which there is an association with tangible improvements.

³ Timmons (2005) makes a similar argument about varying priorities between different groups, and provides cross-national evidence that states adapt their policy priorities according to the income groups that bear the greatest tax burden.

care about the quality of schools in their neighbourhood, because they believe future homebuyers will care and they want to ensure a good return on their property investment (Fischel 2001). A variety of high-quality public services, such as good schools (Chin and Foong 2006), public transportation (Dubé et al. 2013), roads (Gonzalez-Navarro and Quintana-Domeque 2016), and fire, police and emergency medical services (Dronyk-Trosper 2017), can positively affect the value of property through capitalisation effects, in which home values absorb the benefits of public investment. Property owners are particularly sensitive to the presence and quality of these local services, because they have a direct impact on the value of their most important asset (Fischel 2001). Although much of the literature on homeowners' political engagement in high-income countries focuses on voting, willingness to pay taxes is another important political behaviour that we expect may be similarly influenced by the desire of property owners to maintain and improve the value of their property.

The extent to which concerns about property values enter into individuals' decisions on tax compliance is less often considered in the context of Nigeria. This is despite the fact that purchasing land and buildings is often seen as a primary mode of investment in cities in sub-Saharan Africa, especially in the face of high inflation and lack of reliable alternatives, such as stocks or bonds (Goodfellow 2017; Kangave and Zzimbe 2016). Property values may be more important drivers of political behaviour in this type of setting, where the amount of investment in property often exceeds its use value.

In South Africa, people are more likely to pay taxes when the group they identify with is benefiting from state policies (Lieberman 2002). If property owners feel that state policies that contribute to increasing the value of their property are benefiting them as a group, they may be more willing to see taxes as legitimate, and comply with paying them.

In sum, we expect that making more explicit the impact on property values of government investment funded through tax revenue will improve tax morale more than other appeals about public services that do not explicitly mention their effect on property values.

1.3 The role of class and ideology

Although property owners (the relevant constituency for a study on property taxes) are more economically homogeneous than the population as a whole, there may be important variations in both their socioeconomic status and preferences that could shape their political behaviour. For instance, in China, access to basic public services (e.g. transport) is more highly valued by those purchasing houses in the low-end market (i.e. poorer) than in the high-end market (i.e. richer), as reflected by the varying capitalisation effects of public investment across space (Yang et al. 2019). This suggests that property values may be a second-order concern, which only motivates wealthier taxpayers who are more secure in their basic needs, and perhaps have access to private alternatives to public service provision. This could certainly be the case in Lagos, where there are high levels of inequality across the state. Both very high- and very low-end property markets – and even those who own structures in slums – pay the Land Use Charge (LUC) (Goodfellow and Owen 2020). We expect that emphasising how government investment improves property values will encourage compliance by wealthier property owners, rather than poor property owners.

Although political behaviour in Nigeria is typically framed as non-ideological, since the major political parties do not run on distinct ideological platforms (e.g. Adejumo and Kehinde 2007), ideology may still impact citizens' behaviour in non-electoral ways. In particular, given that property taxes tend to be progressive, as a tax on wealth, individuals' attitudes towards equality

and redistribution may impact both their willingness and motivation for paying taxes.

In addition, support for redistribution may theoretically go against a self-interested preference for local economic growth and increased property values. In the US, evidence suggests that ideology does not trump property values. Even liberal homeowners, who ideologically support redistributive policies in the abstract, are resistant to the development of dense housing in their own neighbourhood because of the potential negative effect on property values (Marble and Nall 2020). However, the case may be different in Lagos, especially if there are more property owners who identify as poor or have pro-poor political attitudes. The political role of the middle-class – including the extent to which they support pro-poor policies – varies greatly by country context, and there is still much to understand about what constitutes ‘middle-class values’ in Africa (Resnick 2015). The dearth of evidence examining heterogeneity in property owners’ tax preferences means that the literature does not provide a strong suggestion of a clear hypothesis here. Instead, we focus on this variable as an important identity characteristic that may shape tax attitudes, and explore variation in our treatment effects without a specific hypothesis in mind.

2 Case details

The Land Use Charge (LUC) was introduced in Lagos State in 2001 by consolidating three property-related charges – the tenement rate (previously collected by local governments), ground rent, and the neighbourhood improvement charge. It is collected yearly. Although there have been several changes made to the policy over time,⁴ currently property owners are liable at a variable rate that depends on land use, whether it is owner-occupied, and whether the individual or property falls into an exempt category, such as pensioners or churches. This rate is applied to an assessment of the market value of the property (including the land and buildings), which legally should be reviewed at least every five years.⁵

Payment can be made via several methods, including in-person at an LUC office, at a bank or online. In order to further ease LUC payment and provide a platform to answer questions, in 2021 the Lagos State Government introduced the Lagos On-Line Assistant (LOLA), which is hosted on WhatsApp.⁶ LUC bills – the focus of this study – were distributed between May and July 2021.

The idea that property owners can be persuaded to pay their taxes by highlighting the government’s role in stimulating economic growth through public investment has been alluded to in Lagos. A 2015 article about the LUC in *The Africa Report* says, ‘Persuading powerful figures to buy into the idea of Lagos’ potential to be a modern “megacity” was instrumental. The begrudging support of landlords helped to finance improvements to waste collection, street lighting and roads, that benefited their properties and stimulated economic growth.’⁷

⁴ Most notably in 2018, which prompted widespread outrage. See <https://www.ictd.ac/blog/land-use-charge-controversy-in-lagos-lessons/>.

⁵ See <https://luc.lagosstate.gov.ng/about/> for more details.

⁶ <https://www.alimoshotoday.com/around-lagos/land-use-charge-payment-lasg-introduces-online-assistant-lola-3984431>.

⁷ Paice (2015) ‘Lagos proves Africa’s Property Tax potential’, see: <https://www.theafricareport.com/3393/lagos-proves-africas-property-tax-potential/>.

3 Methodological approach

The primary data source for this paper is an online survey with property owners in Lagos in October 2021, recruited via advertisements placed on Facebook. To examine our main question of interest – what type of appeal works best to motivate property tax morale in Lagos – we use experiments that vary the prominence of different benefits of investment of tax revenue. Given our focus on property owners, it would be particularly challenging and time-consuming to collect an in-person sample with a door-to-door survey; safety concerns from the COVID-19 pandemic were an additional barrier to an in-person study. Using Facebook and an online survey gives us the ability to use Facebook ad targeting based on individuals' online activity, and to easily filter out those who do not fit our sample criteria. Although this limits our ability to generalise our findings to all property owners in Lagos, it gives us an opportunity to test a novel idea and focus on internal validity, which we can ensure by randomising treatment assignment. Future research could seek to replicate these findings in a more generalised study. An experimental approach is appropriate given our interest in measuring the causal effect of different types of appeal.

During the design of the survey, we conducted two rounds of online focus group discussions in October 2020 and March 2021 with nine different property owners, many of them participating in both rounds.⁸ The purpose of these focus groups was to help us develop a deeper understanding of how residents of Lagos think and talk about the LUC, and to inform the design of the survey and experiment. These participants represented a variety of age groups, owned property across six different local government areas, and included six men and three women. Some of them pay their property tax regularly; others said they had never paid it, despite receiving bills.

3.1 Survey recruitment

The sampling frame for the survey includes property owners (including land or building) aged 18 and older, who currently reside in Lagos State. Those who reported in the initial screening questions that they were younger than 18, did not own property, or did not reside in Lagos State were told they were ineligible.⁹ Respondents were recruited using advertisements placed on Facebook, which included a link to the survey on Qualtrics.¹⁰ Given this recruitment method, our sampling frame is also limited to those who have (and actively use) a Facebook account.

3.2 Measurement

Although we would ideally measure tax payment directly, this is challenging without access to government records. Many existing studies that we build upon also focus on attitudes towards paying taxes (e.g. McCulloch et al. 2021; Bodea and LeBas 2016).

Attitudes towards taxation, the main outcome of interest, were asked both before and after the experimental vignettes. Previous research has found that concerns about consistency pressures

⁸ For more on our experience of conducting virtual focus groups, see <http://sigla.georgetown.domains/digitalfieldwork/digital-discussions-hosting-focus-groups-on-zoom/>.

⁹ Although we advertised the survey was for property owners in Lagos, to limit people's ability to game the survey by attempting to retake it we asked several background questions before telling them they were ineligible, so there was some uncertainty around what specific answers would allow one to proceed. Partway through data collection we added an additional check to the beginning of the survey to screen out bots or inattentive respondents, in which respondents entered a number shown in image format. Those who did get this wrong (N = 58) were not allowed to proceed.

¹⁰ See Appendix for more details on the advertising process.

– whereby respondents would be unwilling to change their responses -- are overblown and that the added precision from a pre/post-test design outweighs potential concerns (Clifford et al. 2021). The two main measures of tax morale we use are:

- Willingness to pay LUC even if the government did not check to make sure (*WTP self*): five-point scale ranging from Strongly agree to Strongly disagree.
- Support for the government’s right to make property owners pay LUC (*Support enforcement*): five-point scale ranging from Strongly agree to Strongly disagree.

The first measure, *WTP self*, is a straightforward measure of voluntary compliance, since it specifies the absence of government monitoring and enforcement. However, there are two different reasons why someone might be willing to pay voluntarily. First, they may believe that they personally benefit sufficiently that they would like to pay – for instance, out of a sense of reciprocity. On the other hand, they may want to pay because they think it is right to do so. The second measure, *Support enforcement*, more directly measures the concept of the legitimacy of property taxes – whether it is justified for the government to demand that people pay. This item was based on an Afrobarometer question, with the wording adapted to be specific to Lagos and the LUC.¹¹

Since paying taxes also contributes to the public good, we might expect that in some social groups there are norms of contributing (or not contributing). Similarly, when individuals have an opportunity to either free-ride or contribute to a public good, an individual’s decision to contribute may depend on their expectations of the behaviour of others. If I think no one else is paying their taxes, I may not be inclined to do so myself. Alternatively, if I think most of my neighbours pay their taxes and think it is the right thing to do (a descriptive and injunctive norm), then I may feel pressure to do so. For these reasons, we also ask about beliefs about other taxpayers’ behaviour.

- The percentage of others taking the survey the respondent expects would pay if the government did not check (*WTP others*): Ranging from 0-100.¹²

Finally, we also include one behavioural measure – clicking on a link to LOLA, a WhatsApp-based platform that can be used for bill payment or to get more information about the LUC. There is no baseline measure for this item, and it is coded as 0 if the respondent did not click on the link, and 1 if they did. Although this is not measuring compliance *per se*, it hopefully gives a sense of a respondents’ interest in engaging with the LUC, and is a more costly measure than answering a survey question. The *Link click* outcome is coded as 0 or 1 depending on whether or not the respondent clicked the link.

Class is a contested concept, but here we focus on class as primarily an economic position.¹³ There is also debate about whether to measure class in terms of assets, income or expenditure. Given data [in]availability, using assets is common in Africa, although in some cases this can generate misleading conclusions (Johnston and Abreu 2016). Because we are primarily interested in heterogeneous effects based on class, we included several different measures of it.

¹¹ This question was asked in Afrobarometer Rounds 2-8 (1999-2021): ‘For each of the following statements, please tell me whether you disagree or agree: The tax authorities always have the right to make people pay taxes.’ Answer options include strongly disagree, disagree, neither agree nor disagree, agree, strongly agree, and don’t know.

¹² The order of this item and *WTP self* were randomly shuffled across respondents. The correlation between the two measures at baseline is $r = 0.28$, and the two items are only slightly more correlated if we ask about others first.

¹³ This conceptualisation is motivated by focus group discussions, which largely confirm this economic interpretation of class among property owners in Lagos.

We primarily focus on a categorical self-reported measure, in which respondents categorised themselves as wealthy, middle class, or poor.¹⁴ People were also asked to place themselves on a continuous scale from the poorest to the wealthiest in Lagos State. Given our focus on political attitudes and behaviour, people's self-perceived class is probably an important factor to consider, even if this is an over- or under-estimation of one's actual socioeconomic status (Walsh et al. 2004).

We also collected more objective measures of class. We asked about lived poverty – one's experience of going without enough food, clean water, medicine, gas/fuel or cash income, a measure which tends to track trends in consumption-based measures of poverty (Mattes 2020). We also asked about assets, including whether they or someone in their household owned a motor vehicle or motorcycle, computer, bank account, television or generator.

Finally, we asked about people's support for redistribution and equality using the following question:

- It is desirable that the people are equal, even if the economy is stagnant, rather than unequal but developing: five-point scale ranging from strongly agree to strongly disagree.¹⁵

3.2.1 Experimental vignette

We measure the extent to which Lagos property owners are driven by home values using a vignette experiment. We showed participants a short vignette in which we varied whether or not a road project provides: (1) benefits related to property values and economic growth, or (2) the provision of services for the local population. Respondents were randomly assigned to one of the two versions of the vignette with equal probability, within blocks defined by which particular Facebook ad set brought them into the survey – since random assignment happens after people click on the ad, there are likely correlations between people coming in from the same ad set.¹⁶ Assignment to each of these treatments is balanced across age, gender, whether or not respondents have a college education, Yoruba or non-Yoruba,¹⁷ and self-reported class. Using a pre-/post-test design to improve the efficiency of our estimates (Davidian et al. 2005), respondents were shown the vignette after measuring their pre-treatment attitudes but before post-treatment outcome measures. An outline of this section of the survey with the text of the two experimental vignette options can be found in Table 1.

We chose to focus on roads for several reasons. First, from focus group discussions we learned that road improvements are very important to Lagosians. When participants talked about how well the government was performing – particularly in terms of using property tax revenue – they often made reference to the state of the roads, especially those in their immediate area. Additionally, in order to better isolate the causal mechanism driving people's responses, we chose to vary the framing of the benefit of the same project rather than varying the public good being provided (e.g. whether the government was improving a road or renovating a school building). By holding the public service being provided constant, and only varying the framing,

¹⁴ We first asked people to choose from five options: wealthy, between wealthy and middle class, middle class, between middle class and poor, and poor. Those who chose one of the in-between categories were then prompted to answer which category they felt closer to, if they had to choose, in order to get a simpler, three-category measure. 15% placed themselves between poor and middle class, and three-quarters of these subsequently said they were closer to middle class. 21% placed themselves between middle class and wealthy. About half were ultimately closer to middle class and wealthy respectively.

¹⁵ From the 2007 AsiaBarometer.

¹⁶ Six different ad sets targeted different groups of people, but were identical in the information that they provided. More details can be found in the Appendix.

¹⁷ Yoruba is the largest/indigenous ethnic group in Lagos.

we can better isolate what type of appeal shapes people’s willingness to pay property taxes.

Finally, focusing the vignette on roads may have also improved its realism. When asked prior to the vignette what respondents thought the Lagos State Government uses LUC revenue for, roads was the most frequently selected option (43.3 per cent).¹⁸ Before the vignette, we made it clear to respondents that the story was not real, but that it was based on the type of project the government might actually undertake with tax revenue.

Table 1 Flow of survey questions including experimental treatments and outcome measures. Differences between the two appeals marked in bold

Pre-treatment (outcome) questions:	
<ul style="list-style-type: none"> • The Lagos State Government always has the right to make property owners pay Land Use Charge (LUC). [Strongly agree to Strongly disagree] • I would be willing to pay Land Use Charge (LUC), even if the government did not come check to make sure I had paid it. [Strongly agree to Strongly disagree] • If you had to guess. What percentage of other people taking this survey (who are all landowners in Lagos) do you think would be willing to pay Land Use Charge (LUC),even if the government did not check to make sure they had paid it? [0-100] 	
Instructions:	
<p>On the next page you will see information about a hypothetical road improvement project. Although the details are made-up, the information is based on actual recent improvement projects that the Lagos State Government has completed, and so you should think of this as a project that the Lagos State Government could do in the future.</p> <p>You will be held on the next page for 15 seconds to give you time to read about the road improvement project, and then you will see the arrow button appear to allow you to move forward. We will ask you some questions about the road project later, so please make sure you read carefully.</p>	
Vignette:	
<p>LASG improves roads in Lagos to improve quality of life</p> <p>The Lagos State Government has recently completed the tarring of 50 km of roads across the state. The government also installed streetlights and drainages as part of the project.</p> <p>This is an important public good that will benefit everyone in the area and will improve residents’ quality of life. The government is seeking to develop Lagos into an environment with adequate services for the population.</p> <p>This project is funded by revenue from the Land Use Charge.</p>	<p>LASG improves roads in Lagos to promote economic growth</p> <p>The Lagos State Government has recently completed the tarring of 50 km of roads across the state. The government also installed streetlights and drainages as part of the project.</p> <p>This is an important investment in the economic growth of the area and will improve owners’ property values. The government is seeking to develop Lagos into a 21st century economy.</p> <p>This project is funded by revenue from the Land Use Charge.</p>
Factual manipulation check:	
<p>What is the main benefit that was highlighted in the text that you read? [Economic growth and higher property values, Better quality of life for residents and service provision, Less traffic, I don’t remember]</p>	
Post-treatment (outcome) questions:	
<p>[Repeat of pre-treatment questions]</p> <p>Link Click Measure: We wanted to let you know about a new platform for getting information about and paying the Land Use Charge in Lagos State: ... [more information about the platform]... You can click this link to open the platform in a new window: https://wa.me/2348154333883</p>	

¹⁸ The second most frequent was public facilities (e.g. schools, hospitals), which was chosen by 39.6%, followed by security (30.5%).

3.3 Description of the sample

3.3.1 Comparison with general Lagos population

Compared to the Lagos sample of Afrobarometer¹⁹ (Tables 2-3) – which is representative at the state level – our sample, which targeted property owners in Lagos on Facebook, is more male, slightly older on average, and significantly more educated. We also have a larger proportion of employed respondents, and approximately the same proportion of Christians and Muslims. We also have some self-reported Hausas (8.1 per cent) in our sample, while there are not any in the Lagos sample of Afrobarometer. This is likely due to a clustering of survey respondents in the Agege neighbourhood, an area with a large Hausa community.²⁰

Table 2 Comparison of categorical variables between our sample (FB sample) and the Lagos subsample from Afrobarometer Round 7 (AB Lagos)

Variable	Levels	AB Lagos		FB sample	
		N	%	N	%
Sex	Female	64	50.0	643	15.7
	Male	64	50.0	3461	84.3
Religion	Christian	83	64.8	2692	65.6
	Muslim	44	34.4	1360	33.1
	Other	1	0.8	54	1.3
Ethnicity	Yoruba	90	70.3	2724	66.3
	Igbo	20	15.6	552	13.4
	Hausa	0	0.0	334	8.1
	Other	18	14.1	496	12.1
Education	Less than primary	2	1.6	36	0.9
	Primary school	22	17.2	71	1.7
	Secondary school	81	63.3	1054	25.7
	University	16	12.5	1886	45.9
	Post-graduate	7	5.5	1059	25.8
Employment	No, not looking	42	32.8	118	2.9
	No, looking	19	14.8	613	14.9
	Yes, part time	13	10.2	950	23.1
	Yes, full time	54	42.2	2425	59.1
Own telephone	Household	24	18.8	415	10.2
	None	2	1.6	74	1.8
	Self	102	79.7	3599	88.0
Own computer	Household	21	16.5	567	13.9
	None	66	52.0	265	6.5
	Self	40	31.5	3260	79.7
Own motor vehicle/ motorcycle	Household	36	28.4	798	19.5
	None	62	48.8	499	12.2
	Self	29	22.8	2794	68.3
Own bank account	Household	5	3.9	320	7.8
	None	6	4.7	53	1.3
	Self	116	91.3	3718	90.9

¹⁹ The Afrobarometer is a nationally-representative public opinion survey coordinated across 37 countries in Africa. We used the most recent round – Round 7 (collected in 2017) - for these comparisons.

²⁰ We thank an anonymous reviewer for this insight.

Table 3 Comparison of continuous variables between our sample (FB sample) and the Lagos subsample from Afrobarometer Round 7 (AB Lagos)

Variable	Sample	N	Min	Mean	Max
Age	AB Lagos	128	18	31.9	69
	FB sample	4106	18	36.9	92
Gone without income	AB Lagos	128	1	2.2	5
	FB sample	4085	1	2.3	5
Gone without fuel	AB Lagos	128	1	1.9	5
	FB sample	4089	1	2.3	5
Gone without medicine	AB Lagos	128	1	1.5	5
	FB sample	4084	1	2.2	5
Gone without water	AB Lagos	128	1	1.6	5
	FB sample	4084	1	2.1	5
Gone without food	AB Lagos	128	1	1.9	5
	FB sample	4085	1	2.2	5
National identification	AB Lagos	128	1	3.2	5
	FB sample	4105	1	3.0	5
Support tax enforcement	AB Lagos	128	1	3.9	5
	FB sample	4106	1	3.9	5

Somewhat puzzling is the fact that our respondents report going without income, fuel, medicine, water and food as frequently or more frequently than the representative Lagos sample. This may be, in part, due to the wording of the question, which says, ‘Over the past year, how often, if ever, have you or anyone in your family gone without ...’ It could be the case that our respondents interpreted ‘family’ more broadly than Afrobarometer respondents, who are doing an in-person interview with an enumerator who can provide clarification not possible online. This could also be an effect of COVID, since the Afrobarometer data was collected prior to the COVID-19 pandemic, and ours’ was collected during the pandemic.

Our sample differs from a representative sample of Lagos residents in ways we would expect – particularly around socio-economic status, given our focus on property owners. Encouragingly, our sample is similar in attitudes to the broader Lagos population – both in how much respondents identify with the nation over their ethnic group, and in their belief that the authorities have a right to make people pay taxes.²¹

3.3.2 Property ownership

The median respondent in our sample owns two properties. About half (49.2 per cent) own just one, typically the one in which they live.²² The majority (69.9 per cent) have tenants, which raises interesting questions about who actually bears the financial burden of the LUC, discussed below.

We also asked details about specific properties – for those who owned more than one, we only asked for details of the two properties that they considered most important, in order to limit the length of the survey. Among respondents, 69.1 per cent of the properties were purchased (or

²¹ However, note that we worded this question slightly differently. While the Afrobarometer asks about agreement with the statement ‘The **tax authorities** always have the right to make **people** pay **taxes**’, we asked for agreement with ‘The Lagos State Government always has the right to make **property owners** pay **Land Use Charge (LUC)** (bold added to highlight differences).

²² We report the median because the mean is driven up by some extremely high outliers.

were built on purchased land), and 25.5 per cent were inherited.²³ The type of structure that most people own is an apartment or flat, and about one-third own a detached or semi-detached home.

Only about 6 per cent of the properties that we collected details about was empty land with no structure.

Given the hypothesis proposed by studies analysing high-income countries, that property owners' political behaviour (including tax payment) is driven by their preference to maximise their property values, we asked several questions relating to this. For approximately half of the properties (53.6 per cent), respondents say they have no plans to sell it in their lifetime. Among those who do plan to sell, most seem to have a long-term outlook, with only 15.7 per cent of all properties expected to be sold within the next five years. Almost all (92.8 per cent) respondents expect to make a profit on the properties that they plan to sell. This may make Lagos less likely to prove the theory that property owners ultimately care more about how government action affects their property values, if people feel that a return on their investment is a sure bet.

In terms of respondents' experience with the LUC, 72 per cent of the properties reported receiving a bill for the year 2021.²⁴ The median bill amount reported was ₦21,000 (approximately US\$50), and 82 per cent of the bills were reported to have been paid in full. Less than 1 per cent admitted to not having paid and not planning to pay, perhaps suggesting that there may be an issue with social desirability bias, a problem with the self-reported data. At the end of the survey, we asked respondents who they thought was conducting the survey. Although the majority gave the correct answer (a university in the US, 75 per cent), the second most frequent answer was the Lagos State Government (12.5 per cent). Those who believed the survey was conducted by the state government, federal government, or a Nigerian university were significant more likely to report having paid either in part or in full than those who believed it was a US university.²⁵

4 Results

4.1 Services and tax attitudes

First, we look at what happens when respondents are provided with information about government investment in improving roads, regardless of how this benefit is framed. We find that making it prominent that a government road project uses tax revenue is associated with a significant increase in willingness to pay taxes, support for enforcement, and expectations about others' willingness to pay taxes. We test this using a paired t-test on the difference in means between the pre-treatment and post-treatment measures of these variables.

In terms of the magnitude of these differences, respondents placed themselves about 0.1 standard deviations (of the pre-treatment measure) higher on the five-point willingness-to-pay scale after reading the vignette. While before the vignette 73.9 per cent of respondents agreed or strongly agreed that they would be willing to pay LUC even if the government did not check,

²³ 4.1% of properties were received as a gift. The remaining 1.3% include miscellaneous responses such as winning the property as a prize, subdividing existing land, or participating in a cooperative.

²⁴ For about 10% of properties, the owner was unsure whether they had received a bill this year.

²⁵ When just looking at whether people reported paying in full, the differences are not statistically significant.

79.1 per cent responded in this way after the treatment. Similarly, on average respondents' expectations about how many other property owners would be willing to pay LUC without enforcement increased by about 2 percentage points (moving from 55.6 per cent to 57.8 per cent) post-treatment.

The magnitude of the effect is slightly larger for the support for enforcement question. Respondents were 0.16 standard deviations higher on the scale post-treatment. Before viewing the vignette 73.4 per cent agreed or strongly agreed that the government has a right to make people pay LUC, which increased to 80.2 per cent after viewing the vignette.

Reminding property owners what type of services tax revenue supports is associated with more favourable attitudes towards tax payment and enforcement among respondents. Of course, these findings may be due to a survey design effect. Since we did not include a pure control condition, we cannot rule out the possibility that respondents just positively increased their response the second time they are asked the same question, which they would have done even if they had not been shown any vignette. However, the connection between provision of services and increased tax compliance has been documented in other settings – for instance, Krause (2020) finds that providing a valuable and visible public good (municipal garbage removal) increased tax compliance by 27 per cent in Haiti. While this pattern is noteworthy – given the previously mixed findings about the relationship between service delivery and attitudes towards taxation in Nigeria specifically, the primary focus of this paper is the difference in post-treatment attitudes between respondents who were randomly assigned to each of the two different vignettes.

4.2 Effect of different appeals

Comparing the two randomly-assigned vignettes allows us to identify the causal effect of emphasising economic growth compared to the provision of basic services, in the context of a road renovation. We find that emphasising economic growth increases support for enforcement, relative to the highlighting of public services. While the coefficient on willingness to pay has the same sign, it is not statistically significant. We find no difference in respondents' expectations of others' tax morale across the two vignettes – the growth framing does not affect how likely respondents think their peers are to pay LUC without enforcement, compared to the public goods framing.

The specification we use to measure this is:

$$Y_{i,post} = Y_{i,pre} + D_i + B_i + e_i$$

Where $Y_{i,post}$ is the post-treatment measurement of the dependent variable, $Y_{i,pre}$ is the pre-treatment value of the same measure, and D_i is an indicator for treatment status. B_i is an indicator for block dummies, since we block randomise based on which particular Facebook ad variation people enter the survey through.²⁶ Most outcomes are on a five-point scale. We include these pre-treatment measures to increase precision.

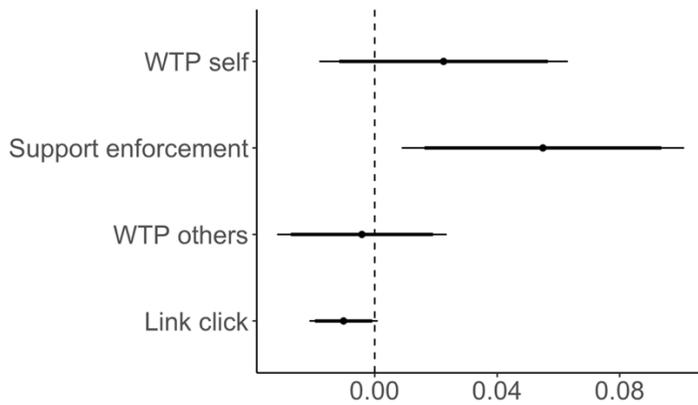
The behavioural measure – clicking a link to access the LUC WhatsApp platform, which both allows for bill payment and accepts enquiries about LUC – was not measured at baseline. For this outcome, we estimate:

²⁶ However, all findings are robust to dropping these dummies, which is still causally identified since the probability of assignment to treatment was equal across blocks.

$$Y_i = D_i + B_i + e_i$$

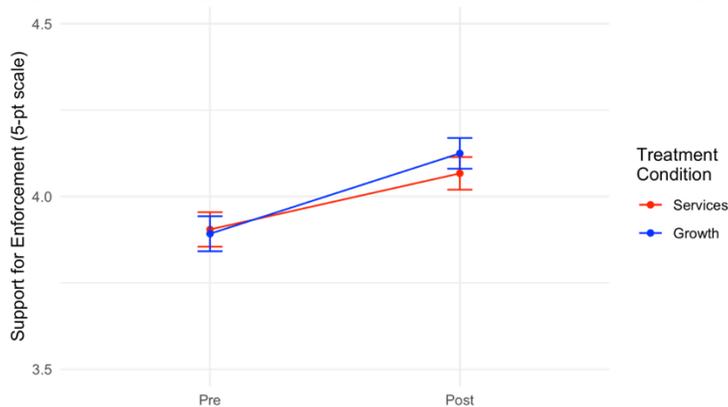
The main results can be found in Figure 1. The coefficients represent the effect of the growth framing on outcomes relative to the services framing. We also show 95 per cent and 90 per cent confidence intervals. The only outcome for which we find a significant effect is support for the state's right to enforce tax payment. Figure 2 shows how support for enforcement changed before and after seeing the tax appeal, by which message the respondent saw. Respondents who saw the growth framing were more accepting of the state's enforcement of tax payment. Specifically, respondents who saw the growth vignette were slightly more than one half of a standard deviation higher on the outcomes scale than those who saw the public goods vignette, which is a substantively significant effect. Among those who saw the services message, support (or strong support) of the government's right to enforce tax payment jumped 5.2 percentage points. Among those who saw the growth message, support jumped 8.4 percentage points.

Figure 1 Effect of growth benefit frame on tax attitudes and behaviour



Note: The thin line is the 95% confidence interval while the thicker line is the 90% interval. Effect sizes are standardised such that the x-axis is in terms of standard deviations. Ad block dummies are included and baseline measures are included as controls. Standard errors are HC2 robust.

Figure 2 Changes in support for enforcement by appeal type



Note: Points indicate group means with 95% confidence intervals.

One's willingness to pay taxes also moves in the same direction, although it does not reach the point of statistical significance. The change in people's opinions about others' behaviour is close to zero. With respect to the behavioural measure – those who saw the public services frame were more likely to click on a link about the LUC than those who saw the growth frame. Interestingly, both pre- and post-treatment measures of one's own willingness to pay taxes are negatively correlated with clicking on the WhatsApp link. This association suggests that, while clicking on the link may indicate interest in learning more about LUC, it is not necessarily related to one's willingness to pay.

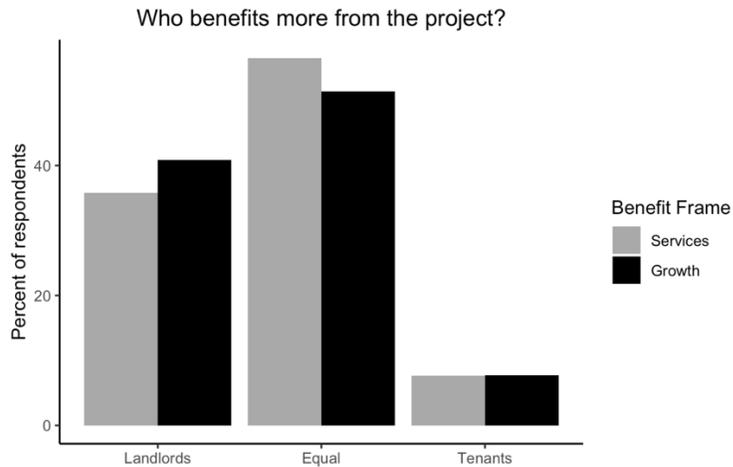
These results are in line with the hypothesis derived from the literature that property owners will be primarily motivated by a desire to increase their property's value – since enforcement contributes to the generation of tax revenue. However, the fact that we do not see statistically significant results for individual willingness to pay at the same time suggests that preferences may diverge, and appeals for tax compliance vary in their effectiveness when it comes to individual's willingness to pay and their normative attitudes about government enforcement. They may see the tax as more legitimate given the benefits claimed, but still be unwilling to pay themselves.

One potential concern is that although the two versions of the vignette that we showed to respondents highlighted different benefits of the road project – either increasing property values or improving quality of life. Roads obviously still do both. Therefore, someone who received the framing about services that benefit the whole community may have still been thinking about how the road would improve property values, and vice versa. One key difference between the two benefits is that, while service delivery is a benefit for all residents, only property owners benefit from an increase in property values. We asked respondents a follow-up question about who benefits from the road, to help us interpret how respondents understood the different frames, and whether they picked up on this difference. In particular, we ask respondents whether they think landlords (a term that colloquially refers to property owners) or tenants would benefit more from the road project.²⁷ Respondents assigned to the growth vignette seemed to pick up on the fact that the project would benefit landlords more, with the effect on property values made salient (Figure 3). The difference in means between vignette conditions is statistically significant – the treatment condition does significantly predict beliefs about who (landlords or tenants) benefits more from the road project ($p = .002$). In turn, this belief about who benefits is significantly positively correlated with both measures of individual tax morale, controlling for pre-treatment attitudes. Those who believe that landlords benefit more than tenants are also more likely to express willingness to pay and are more supportive of the government's right to enforce.²⁸ The fact that many people did not pick up on the fact that rising property values should benefit property owners more than tenants might suggest that our treatment only weakly communicates this consideration. This makes the fact that we found an effect on enforcement all the more notable. Future research should explore stronger treatments.

²⁷ Specifically, they could choose whether landlords will benefit a lot more, a little more, they will benefit the same amount, or tenants will benefit a little more or a lot more.

²⁸ Beliefs about who benefits do not predict beliefs about others' willingness to pay, however. This again strengthens our assumption that people are not simply treating the question about others as a proxy for their own attitudes.

Figure 3 Perceptions of who benefits most from road project on basis of appeal type



4.3 Heterogeneous effects

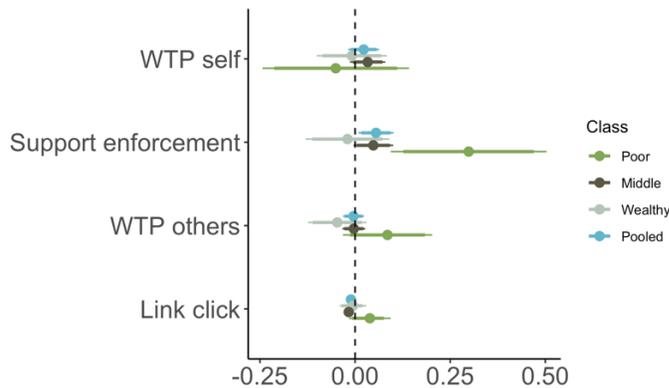
Given that we observe differences in tax attitude after viewing the growth or services vignette, we also wanted to further examine how different types of people respond to these different frames. Specifically, this section explores heterogeneous treatment effects across class, and preferences over equality. Surprisingly, we find that those who identify as poor are more persuaded by the growth framing than those who self-identify as middle class or wealthy. We also find that the relative advantage of the growth frame with respect to increasing individual tax morale and support for tax enforcement disappears among those who are more supportive of equality.

4.3.1 Class

Do promises of economic growth resonate more with higher class respondents? Previous research suggests that caring about property values may be a second-order concern that has little influence over those struggling to meet their basic needs. Although all of the respondents in our sample are property owners, and are on Facebook, there is still class variation as there are many different types of properties one can own in Lagos State. At the very least, there are differences in how people **subjectively** perceive their class status. We therefore look at how effects differ by self-reported class status, expecting that those who consider themselves wealthy will be more likely influenced by the growth appeal than the services appeal. However, the economic growth frame increases poor respondents' support for tax enforcement more than the services frame. The middle class are marginally more influenced by growth with respect to this outcome measure of support for enforcement ($p = 0.07$). For the wealthy, however, there is no difference at all between the effect of the two different frames on support for the state's right to enforce (Figure 4).²⁹ In terms of one's own willingness to pay their LUC, effects are null across all classes, as they were in the sample pooling all respondents. In terms of the link click outcome, the middle class are significantly more likely to click on the link for the LUC WhatsApp platform if they saw the services framing of the road project, relative to the growth framing.

²⁹ While this could be an issue of power, given the small subgroup size, the 'poor' group (N=317) is much smaller than the 'wealthy' group (N=788).

Figure 4 Effect of growth frame on support for enforcement



Note: The thin line is the 95% confidence interval while the thicker line is the 90% interval. Effect sizes are standardised such that the x-axis is in terms of standard deviations (except for link clicks). Ad block dummies are included and baseline measures are included as controls. Standard errors are HC2 robust.

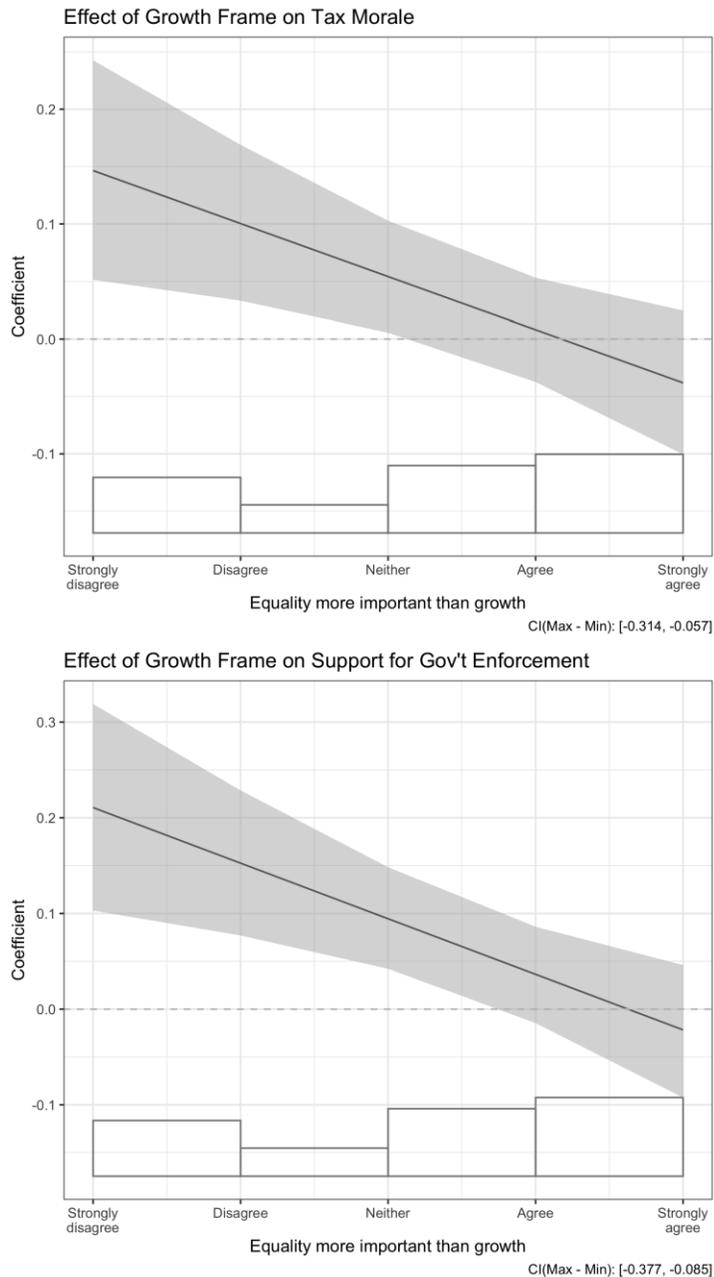
While these findings initially seem puzzling, they become less so if we take them alongside our prior data suggesting that the growth vignette makes people think landlords benefit more than tenants from tax revenue. The growth frame could increase the perception of the poor landlords in our sample that the wealthy should be paying taxes, and therefore that the government should increase enforcement efforts for this. If the growth vignette had the (unintended) consequence of making inequality more salient, it would make sense that poorer respondents increase their preference for government tax enforcement (presumably assuming the wealthy should be the ones to pay more taxes). Sands and de Kadt (2020) find reminders of inequality (i.e. a fancy car) make poor people more in favour of taxing the wealthy and redistribution. This would explain why emphasising growth increases poorer respondents' preferences over tax enforcement, but does not also increase their own willingness to pay. We cannot confirm, however, that this is the correct explanation for the patterns we observe here. Future research should further examine heterogeneity in preferences and reactions to different appeals for tax compliance across class in Lagos and Nigeria more broadly.

4.3.2 Attitudes towards equality

In addition to self-reported class, we also look at heterogeneity on the basis of attitudes towards redistribution and equality. As discussed above, preferences over redistribution should theoretically shape one's views of taxation – particularly for a tax on wealth like property tax. We find this to be the case. Specifically, those who have higher baseline support for equality – measured as agreement that all people should be equal even if the economy is stagnant – are less likely to be persuaded by the growth frame than the services frame. This interaction term is significant for our two primary outcomes – belief in the government's right to enforce, and self-reported willingness to pay taxes (Figure 5). Many property owners do seem to be driven by self-interest, increasing their support of taxes when they feel that they and other landlords benefit most. However, this is not true for property owners who care about equality over economic growth. Appeals to growth do not increase the support of these pro-equality respondents for government enforcement of tax payment, compared to when tax revenue is linked to services that improve the lives of all residents. On the other hand, when sub-setting the sample to those who disagree or strongly disagree that everyone in society should be equal, the growth vignette has a marginally significant effect ($p = 0.08$) on individual willingness to pay, relative to emphasising services (recall that there was no main effect for the different vignettes on this

outcome.) Emphasising property values, therefore, only works for those who do not have a preference for equality, but a pro-poor ideology attenuates the effect.

Figure 5 Heterogeneous effects of framing based on support for redistribution



Note: The solid line represents the effect of the growth appeal relative to the services appeal across different levels of support for equality for two outcomes: one's own willingness to pay taxes and support for the government's right to enforce. The growth appeal is significantly more effective among those who strongly disagree that equality is important. However, the effect shrinks to zero (indicated by the dashed line) as support for equality increases. The grey area represents the 95% confidence interval. The histograms at the bottoms of the plots represent the proportion of respondents who gave each answer for the support for equality question.

5 Conclusion

In this paper we provide an experimental test of what type of appeals increase property tax morale among property owners in Lagos, Nigeria. While the literature on the fiscal contract highlights the link between satisfaction with public service delivery and tax morale, the existing evidence for such a social contract in Nigeria is mixed. Further, while few studies of tax morale consider the potential unique drivers of political behaviour among property owners, literature from other contexts, primarily the US, suggests that they often care more about how government policies affect their property value than anything else. By holding constant the type of government project, and varying which benefit is highlighted – an improvement in quality of life (use value) or increasing local economic growth and property values (exchange value) – we examined the type of messaging that resonates, and among which type of property owners.

First, we find that both vignettes, which connect tax revenue to the delivery of a public service (road) project, are associated with an increase in tax morale, support for enforcement, and an expectation that others will pay without enforcement. These results are in line with existing studies suggesting that making the connection between tax revenue and government-provided goods and services prominent can increase tax morale and compliance. These results may also reflect a situation in which citizens, even highly-educated property owners on Facebook, may not be acutely aware of this connection, or do not think about it much, which would suggest public messaging could focus on this link to try to improve tax morale in Lagos.

Second, we find that highlighting economic growth leads respondents to be support the government's right to enforce property tax payment more – this could be interpreted as enhanced legitimacy of the tax regime or its specific use in this manner. Although willingness to pay is also higher with the growth frame than the public services frame, this difference is not statistically significant and is substantively small. We do find that those who viewed the growth framing saw landlords as benefiting more from the project, relative to tenants. In turn, those who believed that landlords would benefit more from the project – regardless of the framing used – had higher levels of tax morale across both willingness to pay and enforcement dimensions. Together, the data suggest that respondents have a preference for progressive taxes – with greater enforcement when the benefits of tax are going to a select wealthy few. While further evidence, particularly among a representative sample, is an important next step, one potential policy implication to explore is whether highlighting the progressive tax regime enhances citizens' sense of legitimacy of the system and their own willingness to pay (when they know others who are wealthier are paying more than they are).

Finally, we explored two aspects of heterogeneity we thought might be relevant – class and ideology. We find that the growth frame's effect on preference for greater enforcement is largely driven by respondents in our sample who self-identify as poor.³⁰ When we consider those who value equality over economic growth (at baseline), there is no difference in outcomes between the growth vignette and the services vignette. On the other hand, those who are less supportive of equality in a society drive the growth frame's main effect on preference for greater enforcement. These less pro-equality respondents are also more likely to increase their own stated willingness to pay taxes without enforcement when shown the growth vignette compared to the services frame, relative to those who have a greater preference for equality.

Taken together, these findings suggest that, while appealing to property owners' self-interest in

³⁰ The coefficient is also marginally significant for the middle class.

increasing the value of their largest asset may lead some property owners to see taxation as more legitimate, the effectiveness of this messaging depends on their underlying values when it comes to support for equality. Those among our sample of Facebook users who identify as wealthy are significantly more supportive of equality than either the middle class or the poor. Understanding how class identity relates to economic values – and how this can be leveraged to motivate tax payment – is an area ripe for future research. Again, further research is needed before policy lessons can be drawn and implemented, but these results suggest that in future targeted appeals may be important to help maximise tax morale and compliance among Lagos' property owners. This is particularly urgent in highly unequal settings, such as Lagos, where progressive change depends on generating buy-in among the upper classes.

This study has several limitations worth noting. First, while varying only one subtle aspect of the vignette allowed us to hold many factors constant, this is a relatively weak treatment delivered via an online survey, so finding large treatment effects is unlikely. Additionally, as noted earlier, we trade-off generalisability for internal validity. Future research could see if similar appeals – based on how tax revenue can be used in a way that makes property owners richer – work with a more representative sample of property owners in Lagos, or in other large cities in sub-Saharan Africa and low- and middle-income countries more broadly.

Appendices

Appendix A Facebook ad sets

We used six different ad sets that were identical in their design but differed in their targeting.

- Men aged 18 - 33 living in Lagos State (below the state's mean male age as measured in Afrobarometer Round 7)
- Men aged 34+ living in Lagos State
- Women aged 18 - 32 living in Lagos State (below the state's mean female age as measured in Afrobarometer Round 7)
- Women aged 33+ living in Lagos State
- All adults (18+) living in Lagos State
- Targeted to adults with property-owner-related interests and demographic details living in Lagos State (e.g. 'Landlord' listed as occupation or interest in real estate)

Facebook optimises ad placement based on who completes the survey (using code embedded in the final comment page of the survey). Facebook also optimises the picture shown in the advertisement based on performance. We provided six generic and royalty-free photos, all of which were unrelated to taxation – they included pictures of buildings and pictures of people on their phone or a computer. The description noted that the survey would take 20-25 minutes (a conservative estimate based on pre-testing), and respondents would receive a ₦250 airtime token. Among those who finished, the median survey length was actually 19.9 minutes, but the lower and upper quartiles took less than 13 minutes and more than 30 minutes respectively. Respondents could also answer a few additional questions for an additional ₦50; the majority opted in, earning ₦300 total. We also gave respondents an opportunity to donate the value of their incentive that we provided to an NGO that we have partnered with in the past. Approximately 20 per cent donated some portion of their incentive.³¹

Two example ads can be seen in Figure A1.

³¹ Those who self-identified as wealthy gave the largest donation, on average ₦84, while the middle class and poor gave ₦36 and ₦27 respectively.

Figure A1 Examples of ads used to recruit respondents

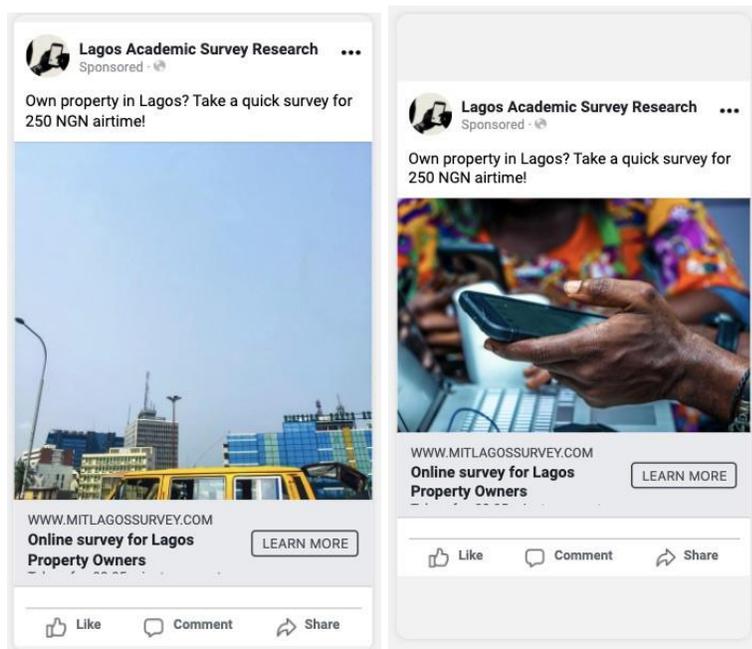


Table A1 Success of ad targeting

Ad set	% of recruits that fit category	% that fit gender	Median age
Young men (18-33)	30.3%	86.4%	36
Older men (34+)	73.1%	95.4%	37
Young women (18-32)	43.4%	66.0%	28
Older women (33+)	72.1%	86.9%	38
Broad audience (18+)	100%	75.6% male	34
Landlord targeted	?	86.6% male	35

Among those who completed the survey, 62 per cent entered via the ad targeted to younger men, and 27 per cent entered via the ad targeted based on interests and demographic details related to property ownership. Only 3.4 per cent were recruited via the ads for younger and older women, combined.

The ad targeting was moderately successful, although was less effective among the younger groups, and particularly young men. Those who came in via the ad targeted to young men (ages 18-33) had a median age of 36. This could be because of miscategorisation by Facebook, or could suggest link-sharing.

Appendix B Experimental treatments

The following vignette was introduced as a hypothetical story about a government project. Respondents were held on the vignette page for 15 seconds to ensure they had time to read it carefully.

LASG Improves Roads in Lagos to [Promote Economic Growth / Improve Quality of Life]

ALL: The Lagos State Government has recently completed the tarring of 50 km of roads across the state. The government also installed streetlights and drainages as part of the project.

Services: This is an important public good that will benefit everyone in the area and will improve residents' quality of life. The government is seeking to develop Lagos into an environment with adequate services for the population.

Growth: This is an important investment in the economic growth of the area and will improve owners' property values. The government is seeking to develop Lagos into a 21st century economy.

ALL: This project is funded by revenue from the Land Use Charge.

Although we do not report the results in the main text of the paper, some respondents were also shown a shared identity prime above the road project vignette. Specifically, one-third received no prime, one-third received a prime related to their identity as a Nigerian, and one-third received a prime related to their identity as a Lagosian. For the results presented in the paper we pool across these treatments.

Paying taxes is an important responsibility of all of us [**Lagosians/Nigerians**] to help us improve our [**state/nation**] together. Let's keep [**Lagos/Nigeria**] working!

The introductory language can be seen in Figure A2. An example of how the participants saw the treatment displayed can be found in Figure A3.

Figure A2 Survey page immediately before treatment

On the next page you will see information about a hypothetical road improvement project. Although the details are made-up, the information is based on actual recent improvement projects that the Lagos State Government has completed, and **so you should think of this as a project that the Lagos State Government could do in the future.**

You will be held on the next page for 15 seconds to give you time to read about the road improvement project, and then you will see the arrow button appear to allow you to move forward.

We will ask you some questions about the road project later, so please make sure you read carefully.



Figure A3 Example of treatment as seen by respondent

Paying taxes is an important responsibility of all of us Nigerians to help us improve our nation together. Let's keep Nigeria working!



LASG Improves Roads in Lagos to Promote Economic Growth

The Lagos State Government has recently completed the tarring of 50 km of roads across the state. The government also installed streetlights and drainages as part of the project.

This is an important investment in the economic growth of the area and will improve owners' property values. The government is seeking to develop Lagos into a 21st century economy.

This project is funded by revenues from the Land Use Charge.

Appendix C Robustness and quality checks

The negative effect on enforcement for the growth treatment remains even when removing the ad set fixed effects, and when limiting our sample based on Qualtrics reCAPTCHA score, a built-in way of detecting bots among survey respondents.³² This score ranges from 0-1, and a score of less than 0.5 indicates that the response is likely from a bot. In our sample, only 2.9 per cent of responses failed this test. The effect also holds steady when removing any phone numbers that were duplicated. Of the 4,106 respondents who completed the survey, there were 3,808 unique phone numbers. Most of the duplicated numbers were only used twice, some of which may be people trying to game the system, and some of which may be legitimate if family members share a number or want to send the airtime to a relative's line.³³

There are some checks in which the result becomes insignificant. First, when limiting to those who passed a factual manipulation check asking what the primary benefit touted was,³⁴ the direction of the effects stay the same, but the enforcement coefficient becomes insignificant. This may be due in part to reduction in statistical power, since only 46.5 per cent (N = 2312) of respondents were able to give us the correct answer. However, the effect size also shrinks to approximately 0.2 of a standard deviation, a small effect. As discussed in the text, this underlies the importance of having a sufficiently strong treatment.

The effect also becomes insignificant when limiting to those who passed attentiveness checks.

Appendix D Identity experiment results

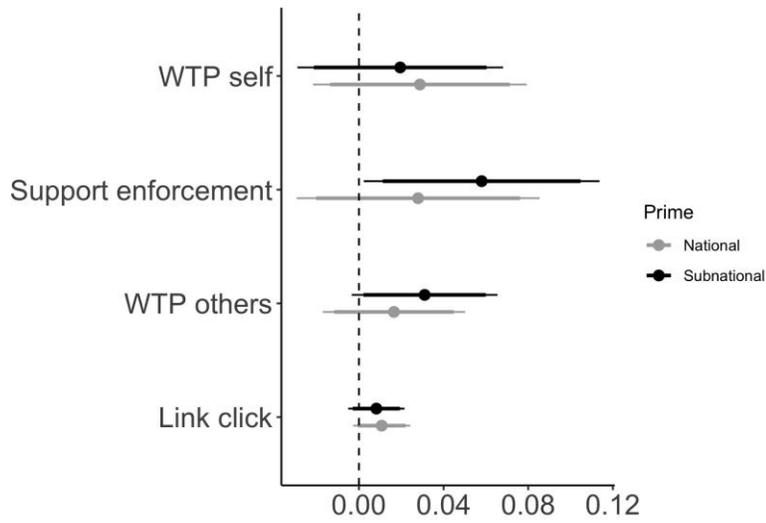
Here we present the results for the identity prime experiment. Respondents were randomly assigned to one of three conditions with equal probability: a control condition (no prime), a subnational prime (Lagosian), or a national prime (Nigerian). We find that although coefficients for both the national and subnational identity primes are in the positive direction relative to the control condition, the only statistically significant effect is for the belief that the Lagos State Government has the right to make property owners pay LUC (Figure A4). Further, the coefficient is only significant for the prime that drew attention to the Lagos-based identity, and not the national-level prime. There are no detectable differences between the effects of the subnational and national primes. This suggests that appealing to the Lagosian identity may, on average, be somewhat more effective than appealing to a Nigerian identity, but the difference is probably small.

³² You can read more about this technology at <https://developers.google.com/recaptcha/docs/v3>.

³³ The most duplicated phone number was used 23 times, and 49 numbers were used 3 or more times. However, duplicates were not paid out unless they provided a reason for the number being used twice (e.g., a relative using their number for the survey). However, it is impossible to accurately adjudicate which of these reasons is legitimate.

³⁴ 'What is the main benefit that was highlighted in the text that you read?' Options included: economic growth and higher property values, better quality of life for residents and service provision, less traffic, and I don't remember.

Figure A4 Effect of identity prime on tax attitudes and behaviour



Note: The thin line is the 95% confidence interval while the thicker line is the 90% interval. Effect sizes are standardized such that the x-axis is in terms of standard deviation (except for link clicks). Ad block dummies are included and baseline measures are included as controls. Standard errors are HC2 robust.

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