Online Appendix for Paying for Growth or Goods: Tax morale among property owners in Lagos

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Contents

A Experimental Design

A.1 Facebook Ad Sets

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

- Men ages 18 - 33 living in Lagos State (below the state's mean male age as measured in Afrobarometer Round 7)

- Men ages 34+ living in Lagos State

- Women ages 18 - 32 living in Lagos State (below the state's mean female age as measured in Afrobarometer Round 7)

- Women ages 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 optimizes ad placement based on who completes the survey (using code embedded in the final comment page of the survey). Facebook also optimizes 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 pretesting) and respondents would receive a 250 Nigerian Naira (NGN) airtime token. Among those who finished, the median survey length was actually 19.9 minutes, but the lower and upper quartiles took less then 13 minutes and more than 30 minutes respectively. Respondents could also answer a few additional questions for an additional 50 NGN, and the majority opted in, earning 300 NGN total. We also gave respondents an opportunity to donate the value of their incentive, which we provided to an NGO that we have partnered with in the past. Approximately 20% donated some portion of their incentive.[1]

Two example ads can be seen in Figure A.1.

Among those who completed the survey, 62% entered via the ad targeted to younger men, and 27% entered via the ad targeted based on interests and demographic details related to property ownership. Only 3.4% 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 because of miscategorization by Facebook or could suggest link-sharing.

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[1]Those who self-identified as wealthy gave the largest donations on average of 84 NGN while the middle class and poor gave 36 NGN and 27 NGN respectively.
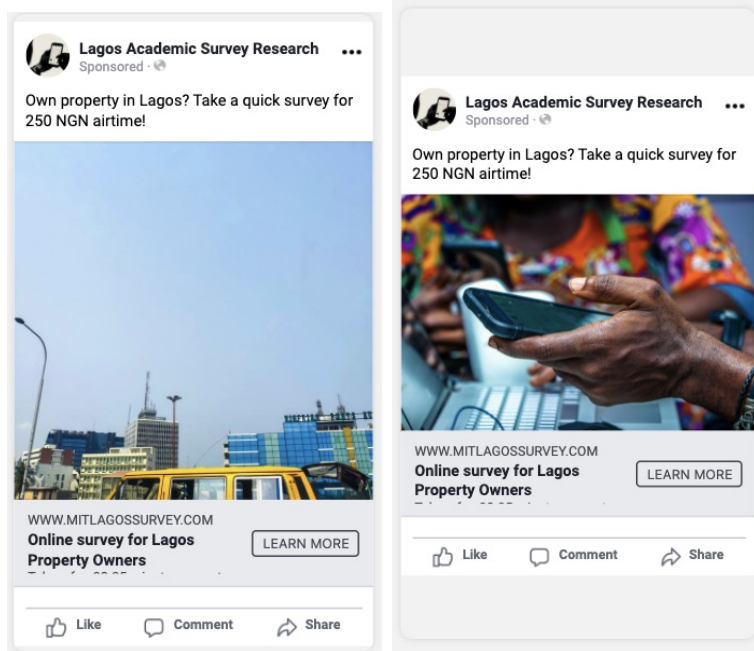
Figure A.1: Examples of ads used to recruit respondents

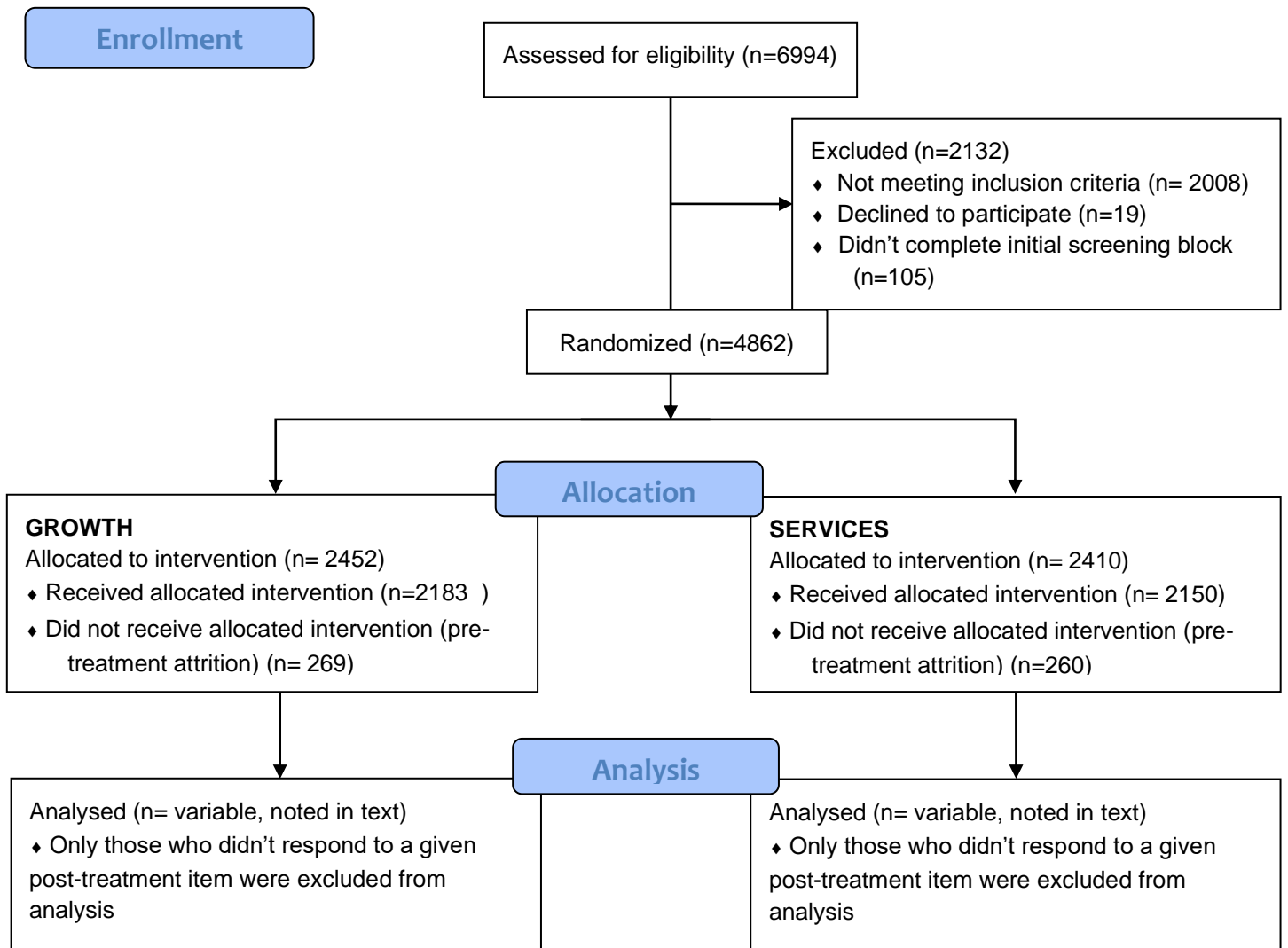| Ad Set	% of recruits that fit category	% that fit gender	Median age
Young Men (18-33)	30.3%	86.4%	36
Older Men (34+)	73.1%	95.4%	37
Young Women (18-32)	43.4%	66.0%	28
Older Women (33+)	72.1%	86.9%	38
Broad Audience (18+)	100%	75.6% male	34
Landlord Targeted	?	86.6% male	35

A.2 Focus Group Discussions

During the design of the survey, we also 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.[2] The purpose of these focus groups was to help us develop a deeper understanding of how residents of Lagos think and talk about the Land Use Charge 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, while others shared they have never paid it, despite receiving bills.

We also found that taxation is in fact associated with government performance in terms of the provision of infrastructure and "social amenities." However, we found important nuances in terms of how people think about these social benefits. Specifically, some participants indicated an understanding of taxes as serving a redistributive purpose or facilitating the economic growth of the state. Several people freely admitted that they do not pay, despite receiving bills, with most linking non-payment to a combination of (1) not seeing the benefits and (2) lack of enforcement. One young man explained that he moved to his place a little over two years ago and has never paid LUC, despite having received the demand notice for the past three years. Another woman straightforwardly stated, "Since no one has come to lock up my property, it's all fine and good."

A.3 CONSORT Flow Diagram for Treatment Assignment

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

C O N S O R T

TRANSPARENT REPORTING of TRIALS

CONSORT 2010 Flow Diagram

Enrollment

Assessed for eligibility (n=6994)

Excluded (n=2132)
- Not meeting inclusion criteria (n= 2008)
- Declined to participate (n=19)
- Didn't complete initial screening block (n=105)

Randomized (n=4862)

Allocation

GROWTH
Allocated to intervention (n= 2452)
- Received allocated intervention (n=2183)
- Did not receive allocated intervention (pre-treatment attrition) (n= 269)

SERVICES
Allocated to intervention (n= 2410)
- Received allocated intervention (n=2150)
- Did not receive allocated intervention (pre-treatment attrition) (n=260)

Analysis

Analysed (n= variable, noted in text)
- Only those who didn't respond to a given post-treatment item were excluded from analysis

Analysed (n= variable, noted in text)
- Only those who didn't respond to a given post-treatment item were excluded from analysis

A.4 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 revenues 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 A.2 and an example of how the participants saw the treatment displayed can be found in Figure A.3.

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.

<div align="right">

→

</div>

Figure A.2: Survey page immediately before treatment

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.

Figure A.3: Example of treatment as seen by respondent

B   Descriptive Statistics

B.1   Comparison to Afrobarometer

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. Compared to the Lagos sample of the Afrobarometer[3] sample (Tables B.1-B.2) – 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. We have approximately the same proportion of Christians and Muslims. We also have some self-reported Hausas (8.1%) in our sample, while there are not any in the Lagos sample of the Afrobarometer.

Encouragingly our sample is also similar in attitudes to the broader Lagos population, for instance 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.[4]

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 that 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 while ours was collected during the pandemic.

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[3]The Afrobarometer is a nationally-representative public opinion survey coordinated across 37 countries in Africa. We used the most recent round available at time of writing – Round 7 (collected in 2017) for these comparisons.

[4]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)* (emphasis added to highlight differences).

Variable	Levels	AB Lagos		FB Sample	
		N	%	N	%
Sex	Female	64	50.0	642	15.7
	Male	64	50.0	3456	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	35	0.8
	Primary School	22	17.2	71	1.7
	Secondary School	81	63.3	1054	25.7
	University	16	12.5	1885	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	10.1
	None	2	1.6	92	2.2
	Self	102	79.7	3599	87.7
Own Computer	Household	21	16.5	567	13.8
	None	66	52.0	279	6.8
	Self	40	31.5	3260	79.4
Own Motor Vehicle/	Household	36	28.4	798	19.4
Motorcycle	None	62	48.8	514	12.5
	Self	29	22.8	2794	68.0
Own Bank Account	Household	5	3.9	320	7.8
	None	6	4.7	68	1.7
	Self	116	91.3	3718	90.5

Table B.1: Comparison of categorical 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	4106	1	3.0	5
Support Tax Enforcement	AB Lagos	128	1	2.1	5
	FB Sample	4106	1	3.9	5

Table B.2: Comparison of continuous variables between our sample (FB Sample) and the Lagos subsample from Afrobarometer Round 7 (AB Lagos).

B.2 Property Ownership

The median respondent in our sample owns two properties, and about half (49.2%) own just one, typically the one in which they live.[5] The majority (69.9%) have tenants, which raises interesting questions about who actually bears the financial burden of the LUC, discussed below.

We also asked for details about specific properties; for those who own multiple, we asked details only of the two properties that they considered most important, in order to limit the length of the survey. Across respondents, 69.2% of the properties were purchased (or were built on purchased land) and 25.6% were inherited.[6] 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% of the properties that we collected details about were empty lands with no structure.

Given the hypothesis proposed by studies analyzing high-income countries that property owners' political behavior (including tax payment) is driven by their preference to maximize their property values, we asked several questions related to this connection. For approximately half of the properties (53.6%), 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% of all properties expected to be sold within the next 5 years. Almost all (92.8%) respondents expect to make a profit on the properties that they do plan to sell. This may make Lagos a hard case for the theory that property owners ultimately care more about how government actions affect their property values, if people feel that a return on their investment is a sure bet.

In terms of respondents' experience with the Land Use Charge, 73% of the properties reported receiving a bill for the year 2021.[7] The median bill amount reported was 21,000 NGN (approximately $50 USD), and 82% of the bills were reported to have been paid in full. Less than 1% admitted to not having paid and not planning to pay, perhaps suggesting that there is 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%), the second most frequent answer was the Lagos State Government (12.5%). Those who believed the survey was conducted by the state government, federal government, or a Nigerian university were significantly more likely to report having paid either in part or in full than those who believed it was a U.S. university.[8].

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[5]We report the median because the mean is driven up by some extremely high outliers.

[6]4.2% of properties were received as a gift. The remaining 1.0% include miscellaneous responses such as winning the property as a prize, subdividing existing land, or participating in a cooperative.

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

[8]When just looking at whether people reported paying in full, the differences are not statistically significant

C   Regression tables

Table C.1: Effect of Growth/Property Values Treatment on Tax-Related Attitudes

	Enforcement		Tax Morale - Self		Tax Morale - Others	
	(1)	(2)	(3)	(4)	(5)	(6)
(Intercept)	1.81***		1.35***		8.40***	
	(0.07)		(0.07)		(0.55)	
Treat:Growth/property values	0.06**	0.06**	0.02	0.02	−0.09	−0.11
	(0.03)	(0.03)	(0.02)	(0.02)	(0.37)	(0.37)
Pre-treat enforcement	0.58***	0.57***				
	(0.02)	(0.02)				
Pre-treat morale self			0.68***	0.68***		
			(0.02)	(0.02)		
Pre-treat morale others					0.89***	0.88***
					(0.01)	(0.01)
Ad FEs		X		X		X
R^2	0.41	0.41	0.55	0.55	0.79	0.79
Adj. R^2	0.41	0.41	0.55	0.55	0.79	0.79
Num. obs.	4274	4274	4266	4266	4264	4264
RMSE	0.83	0.83	0.74	0.74	11.97	11.95

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

D Robustness and Quality Checks

The negative effect on enforcement for the property values and 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.[9] 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 2.7% of responses failed this test.

The effect also persists when removing duplicated phone numbers. Of the 4,967 respondents who provided a phone number, 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.[10]

There are some checks in which the result becomes insignificant. First, when limiting to those who passed a factual manipulation check (FMC) asking what the primary benefit touted was,[11] the direction of the effects stay the same, but the enforcement coefficient becomes insignificant (N=2312). The effect is also insignificant when limiting to those who passed all three attentiveness checks (N=893).

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[9]You can read more about this technology here: hhttps://developers.google.com/recaptcha/docs/v3

[10]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).

[11]"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.

E   Other Analyses

E.1   Treatment Effects by Class

Given that we observe differences in tax attitudes after viewing the growth or services vignette, we also wanted to examine further how different types of people respond to these different frames. Do promises of economic growth and increased property values 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, class variation likely exists since there are many different types of properties one could own in Lagos State. At the very least, there are differences in how people *subjectively* perceive their class status.

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". 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 E.1).[12] 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.

While these findings initially seem puzzling, if we take them alongside our data suggesting that the growth vignette makes people think landlords benefit more than tenants from tax revenue, they become less so. It could be that poor landlords in our sample are influenced by the growth frame to increase their perception that the wealthy should be paying taxes, and therefore that the government should increase enforcement efforts to do this. If the growth vignette had the (unintended) consequence of making inequality more salient, it would make sense that poorer respondents increase their preferences for government tax enforcement (presumably assuming the wealthy should be the ones to pay more taxes). **?** find reminders of inequality (i.e., a fancy car) make poor people more in favor of taxing the wealthy and redistribution. This would explain why emphasizing 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.

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[12]While this could be an issue of power, given the small subgroup size, the "poor" group (N=317) is actually much smaller than the "wealthy" group (N=788).
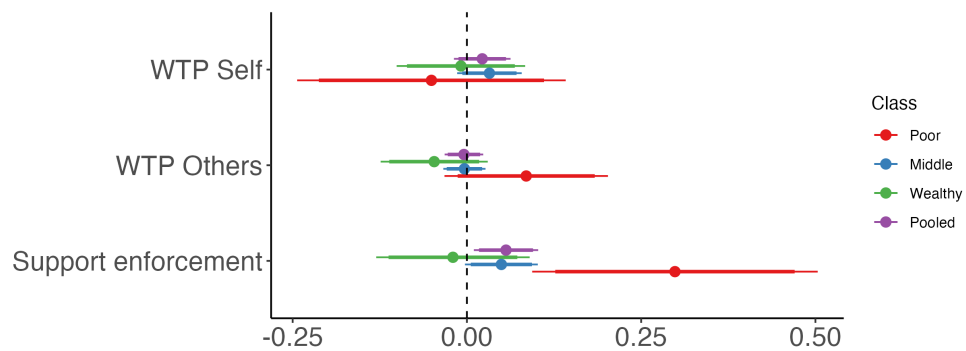
Note: The thin line is the 95% confidence interval while the thicker line is the 90% interval. Effect sizes are standardized such that the x-axis is in terms of standard deviations (except for link clicks). Ad block dummies are included and baseline measures are included as controls. Standard errors are HC2 robust.

Figure E.1: Effect of Growth Frame on Support for Enforcement

F   Research Ethics

This project went through comprehensive IRB review by the MIT Committee on the Use of Humans as Experimental Subjects (COUHES) under protocol #2005000153.

We did not use deception in our experimental design, clearly stating that the vignette respondents saw was a hypothetical situation.

We expect little potential for harm from this research, however, because we ask about potentially sensitive subjects and a behavior (tax avoidance) that is technically illegal, we were careful to protect respondent identity. Although we needed to collect phone numbers (which are personally identifiable information) for the purposes of compensation, we store the phone numbers in a separate file from survey responses.

Respondents were shown the following consent language at the beginning of the survey:

> I agree to participate in a research study conducted by the Massachusetts Institute of Technology, a university in the U.S. In order to analyze responses to the questionnaire, my answers will be recorded. No identifying information about me will be made public, and any views I express will be kept completely confidential.
>
> Findings from this study will be reported in scholarly journals, at academic seminars, and at research association meetings. The data will be stored in a secured location and retained indefinitely. My participation is voluntary. I am free to withdraw from the study at any time.
>
> Should you have questions, please contact us at mitlagosresearch@gmail.com.
>
> You will receive 250 NGN in airtime within 3 days of completing the survey.

No debriefing was provided due to the absence of deception. Respondents were able to get in touch with us with any concerns through the Facebook page where the ads were hosted, as well as via a dedicated email address that was provided to respondents. Respondents were also given the opportunity to provide comments at the end of the survey.

Participants were compensated between 0-300 NGN (about $0.75), depending on (1) whether they opted to complete a bonus section for an additional 50 NGN (2) how much of their compensation they chose to donate to an NGO at the end. This amount was small enough to ensure that no one would feel pressured to complete the survey for the money, but enough to compensate for any phone data used for completion of the survey.

G   Full Questionnaire

I agree to participate in a research study conducted by [blinded]. In order to analyze responses to the questionnaire, my answers will be recorded. No identifying information about me will be made public, and any views I express will be kept completely confidential. Findings from this study will be reported in scholarly journals, at academic seminars, and at research association meetings. The data will be stored in a secured location and retained indefinitely. My participation is voluntary. I am free to withdraw from the study at any time. Should you have questions, please contact us at [blinded] You will receive 250 NGN in airtime within 3 days of completing the survey. Please select one of the following options. If you choose not to participate, the survey will end immediately. *Remember that you can only take this survey and receive the airtime once.*	 o I agree to participate o I do not agree to participate
Before we get started, we are going to ask you a few questions to determine whether you are eligible for this survey. Click the arrow to proceed.	
Are you a resident of Lagos State? *In other words, do you stay in Lagos State most of the time?*	o Yes o No
Do you currently own property (building or land) <u>in Lagos State</u>?	o Yes o No
If previous answer is Yes → How many different properties (building and/or land) do you currently own <u>in Lagos State</u>? *Please enter your answer using numeric digits (for example "3").*	[numeric entry]
In what year were you born?	[year drop-down]

If previous answer is 2003 → Are you 18 years old?	o Yes o No
Help us keep track of who is paying attention to this survey. Please select "Somewhat disagree" from the options below.	o Strongly disagree o Somewhat disagree o Neither agree nor disagree o Somewhat agree o Strongly agree
What is your gender?	o Male o Female o Other (please specify)
What is your ethnic community, cultural group or tribe?	[drop-down or specify other]
What is your present religion, if any?	o Muslim o Christian o Traditionalist o Atheist o Agnostic o None

What is the highest level of education you have completed?	o None o Informal schooling only (including Koranic schooling) o Some primary schooling o Primary school completed o Intermediate school or some secondary school / high school o Secondary school / high school completed o Post-secondary qualification, other than university (for example, NCE/OND/HND) o Some university o Completed university o Post-graduate degree (for example, Masters or PhD) o Other (please specify)
In which Local Government Area (LGA) of Lagos do you live?	[drop-down]
In which Local Council Development Area (LCDA) of Lagos do you live?	[filtered drop-down]
15 Please enter the number you see in the image above. Please use numerical digits (e.g. **3**).	[numeric entry]
Congratulations! You are eligible to participate in this survey. Please click the arrow to begin.	

Over the past year, how often, if ever, have you or anyone in your family:
 	
   o Gone without enough food to eat?
   o Gone without enough clean water for home use?
   o Gone without medicines or medical treatment?
   o Gone without enough gas/fuel to cook your food?
	o Never
	o Just once or twice
	o Several times
	o Many times
	o Always

o Gone without a cash income?	
Which of these things do you or anyone in your household **own**? o Motor vehicle or motorcycle o Computer o Bank Account o Television o Generator	 o No, don't own o Yes, someone else owns o Yes, do own
Do you have tenants in any of your properties?	o Yes o No
Now, we are interested in what sections people like to read in the newspaper. This might affect what they learn from articles and how they feel about the issues discussed in them. We also want to see if people are reading the questions carefully. To show that you've read this much, please mark both the Classified and None of the above boxes below. That's right, just select these two options only. Regardless of how frequently you read the newspaper, what would you say are your favorite newspaper sections to read? (*Please check all that apply*)	 o National o Sports o Local o Classified o Business o Opinion o All of the above o None of the above
Thinking about everyone living in Lagos State, on a scale from those who are the poorest to those who are the wealthiest, about where would you place yourself?	 [scale 0-100]
In general, would you consider yourself poor, middle class, or wealthy?	o Poor o Between Poor and Middle Class o Middle Class o Between Middle Class and Wealthy o Wealthy

If Between Poor and Middle Class → If you had to choose, would you consider yourself closer to poor or closer to middle class?	o Poor o Middle Class
If Between Middle Class and Wealthy → If you had to choose, would you consider yourself closer to middle class or closer to wealthy?	o Middle Class o Wealthy
We all have many identities. It is normal for some of these identities to be more important to us than others when we think of ourselves. This question asks you about how close you feel to different identities. If you have 10 points and these 8 identities, how will you divide your 10 points across these 8 identities, putting down more points into the identities you feel closest to (must add up to 10)?	o [Self-reported religion] o [Self-reported tribe] o The community where I live o [Self-reported class] o Nigerian o Lagosian o Landlord o [Unselected self-reported gender]
[Section that asks details of 1-2 properties, not used for this study]	
[Experimental module for separate study]	
Please tell us whether you agree or disagree with the following statement: *It is desirable that the people are equal, even if the economy is stagnant, rather than unequal but developing.*	o Strongly agree o Somewhat agree o Neither agree nor disagree o Somewhat disagree o Strongly disagree

Thinking about everyone living in Lagos State, on a scale from the poorest to the wealthiest… Who do you think **actually benefits** the most from the revenues of the Land Use Charge (LUC)?	[scale 0-100, poorest to wealthiest]
Thinking about everyone living in Lagos State, on a scale from the poorest to the wealthiest… Who do you think **should benefit** the most from the revenues of the Land Use Charge (LUC)?	[scale 0-100, poorest to wealthiest]
What do you think the Lagos State Government spends the revenue it gets from the Land Use Charge (LUC) on?	o Roads o Public facilities (e.g., schools, hospitals) o Security o Salaries for civil servants o Housing o Paying off debt o It is used inappropriately (i.e., corruption or looting) o Unsure

Please tell us whether you agree or disagree with the following statement: *The Lagos State Government always has the right to make property owners pay Land Use Charge (LUC).*	o Strongly agree o Somewhat agree o Neither agree nor disagree o Somewhat disagree o Strongly disagree
Please tell us whether you agree or disagree with the following statement: *I would be willing to pay Land Use Charge (LUC), even if the government did not check to make sure I had paid it.*	o Strongly agree o Somewhat agree o Neither agree nor disagree o Somewhat disagree o Strongly disagree
If you had to guess. What percent 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?	 [scale 0-100]
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, <u>so please make sure you read carefully.</u>	
If not control → ***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!***	
<u>**LASG Improves Roads in Lagos to Promote Economic Growth/Impove Quality of Life$**</u> 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. OR 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. This project is funded by revenues from the Land Use Charge.	

As a reminder, this survey is being run by [blinded]	
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
Please tell us whether you agree or disagree with the following statement: *The Lagos State Government always has the right to make property owners pay Land Use Charge (LUC).*	○ Strongly agree ○ Somewhat agree ○ Neither agree nor disagree ○ Somewhat disagree ○ Strongly disagree
Please tell us whether you agree or disagree with the following statement: *I would be willing to pay Land Use Charge (LUC), even if the government did not check to make sure I had paid it.*	○ Strongly agree ○ Somewhat agree ○ Neither agree nor disagree ○ Somewhat disagree ○ Strongly disagree
If you had to guess. What percent 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? [scale 0-100]	
Please tell us whether you agree or disagree with the following statement: *It is desirable that the people are equal, even if the economy is stagnant, rather than unequal but developing.*	○ Strongly agree ○ Somewhat agree ○ Neither agree nor disagree ○ Somewhat disagree ○ Strongly disagree

Who do you think will benefit more from the road project you read about?	Landlords will benefit a lot more than tenants o Landlords will benefit a little more than tenants o Landlords and tenants will benefit the same amount Tenants will benefit a little more than landlords o Tenants will benefit a lot more than landlords o
We wanted to let you know about a new platform for getting information about and paying the Land Use Charge in Lagos State: To curb fraudulent practices in the payment of Lagos land use charges, Lagos State government has designed a platform known as **Lagos On-line Assistant**, LOLA, where residents can make payment for Land Use Charge conveniently, without any physical interaction with government official. The platform also accepts inquiries from users and provides instant answers to persons seeking clarifications on different issues relating to the Land Use Charge. You can click this link to open the platform in a new window: https://wa.me/2348154333883	
Let us suppose that you had to choose between being a Nigerian and being a [self-reported ethnicity]. Which of the following statements best expresses your feelings:	o I feel only Nigerian o I feel more Nigerian than [ethnicity] o I feel equally Nigerian and [ethnicity] o I feel more [ethnicity] than Nigerian I feel only [ethnicity]
Before we finish up with a few final questions, we would like to give you the chance to donate some or all of your 250 NGN airtime reward for participating in this survey to Justice and Empowerment Initiatives (JEI), an NGO that works to improve the lives of people living in slums and	o [numeric entry]

informal settlements in [Lagos/Nigeria]. How much of this would you like to donate? Enter "0" if you would like to receive the full airtime amount.	
Just to confirm, you would like to: Donate [amount entered] NGN to support the poor in [Lagos/Nigeria]. Receive [250 – amount entered] NGN in airtime. Is this correct?	o Yes o No
If No → Please enter how much you'd like to donate and how much you'd like to receive in airtime. Donate : _____ Receive in airtime : _____	[numeric entry]
Do you currently have a job that pays a cash income?	o Yes, full time o Yes, part time o No, but I am looking for work o No, and I am not looking for work
Do you pay personal income tax (PIT) on your income?	o Yes o No

What is your state of origin?	[drop-down]
In what year did you move to Lagos State?	[drop-down]
Just one more question: Who do you think is conducting this survey?	o Private Company o Media o Federal Government o Lagos State Government o A university in the U.S. o A university in Nigeria o An NGO/charity o Other (please specify)
Would it be okay if we contacted you in the future for other surveys?	o Yes o No
Have you ever taken an online survey before on Facebook?	o Yes o No
Please give us your phone number so we can send you airtime of 250 NGN for your participation in the survey. Please type in numbers only (e.g., 0712456254).	[numeric entry]
Please type in your phone number again to confirm we have it correct. Again, only type the numbers exactly as you did last time.	[numeric entry]
If phone numbers don't match → You entered two different numbers. Please choose the correct one:	o First phone number entered o Second phone number entered
Since each person is only allowed to take this survey once we will only pay each phone number once. If there is some special circumstance or reason why a different person may have taken this survey but provided the same phone number as you did please describe who this person is (their relationship to you, their age and gender) and why they are using the same phone number as you.	[text entry]
Do you have any other comments for us about this survey?	[text entry]

We would like to offer you the chance to answer just a few additional questions for an extra 50 NGN airtime. Some of the additional questions are open-ended, and <u>you will only receive the extra 50 NGN if you provide quality and sufficiently long answers to each of these</u>. Each answer should be a few sentences. **We will be checking these responses before distributing airtime.** Would you like to continue to answer these additional questions?	 ○ Yes ○ No, I'm ready to end the survey
In your opinion, what does it mean to be a "Lagosian"? (*select all that apply*)	○ Indigenous to Lagos ○ Born in Lagos ○ Brought up in Lagos ○ Resident of Lagos for many years ○ Resident of Lagos, even for a short time ○ Law-abiding resident of Lagos ○ Other (please specify)
In a typical week (7 days), how many days do you go out to eat a meal at a restaurant?	[numeric entry]
[Two questions for separate study]	
Would you like to add your 50 NGN bonus to your donation to JEI?	○ Yes, I would like to donate it. ○ No, I would like to receive the airtime.

H Pre-Analysis Plan with summarized results

Identity, Values, and Taxation: The terms of the fiscal contract in Lagos

October 26, 2021

1 Timeline

This Pre-Analysis Plan is being submitted shortly after data collection has completed but before any analysis or manipulation of the data has taken place. After a small pilot (N=302), for the full launch we collected 4,106 completed survey responses between October 12 - 22, 2021.

1.1 Main Research Questions and Hypotheses

RQ1: What motivates property owners in Lagos to have higher levels of tax morale?

H1A: Government actions that improve property values will have a more positive effect on tax attitudes than those that improve the quality of life of all residents.

Only supported for one measure of tax attitudes: support for enforcement. See below for details on robustness checks and alternative specifications.

H1B: However, this relationship will be weaker among property owners who are solely owner-occupiers (e.g., don't own any properties where they don't live).

The interaction effect between treatment condition and having tenants is only significant for two measure of tax attitudes, support for enforcement and the link click. However, in one case it is in the opposite direction than expected: those who have tenants at any of their properties are *less* persuaded by a road's effect on property values than those with no tenants. One the other hand, those with tenants are more likely to click through to the Lagos On-line Assistant (LOLA) when presented with the growth frame over services frame, relative to those without tenants.

H1C: This relationship will be stronger among those who are of a higher class.

The interaction effect between treatment condition and self-reported class (5-categories) is only significant for support for enforcement. However, it is

in the opposite direction than expected: those who identify as poor are most persuaded by a road's effect on property values. One the other hand, those with tenants are more likely to click through to the Lagos On-line Assistant (LOLA) when presented with the growth frame over services frame, relative to those without tenants. See below for more on alternative measures of class.

RQ2: How does identity influence tax morale in among property owners?

H2A: A sub-national identity prime will have a more positive effect on tax morale than a national identity prime or than no prime.

For the support for enforcement outcome, those who received the sub-national prime were more supportive of enforcement post-treatment relative to the control condition, but there was no significant difference between the sub-national and national primes. Those who received the sub-national prime were also less likely to click on LOLA than those in either of the other conditions.

H2B: This relationship will be stronger for those who are lower class than those who are higher class.

There are no significant interactions between prime condition and self-reported class.

RQ3: How does identity influence the motivations of property owners to pay taxes?

H3: Those who are primed with a sub-national identity will be more likely to value access to adequate services for all residents than their own property values.

There are no significant interactions between prime condition and benefit condition.

2 Research Strategy

2.1 Sampling/Recruitment

2.1.1 Sampling Frame

The sampling frame for the study includes property owners ages 18 and older who reside in Lagos State. Given our recruitment method, we are also limited to those who have (and use) a Facebook account. Our sample size is 4106 completed surveys.

We will also provide a comparison of our sample to Afrobarometer data, using a small set of overlapping questions, in order to get a sense of how it differs from the general Lagos State population.

2.1.2 Recruitment

Respondents were recruited using advertisements placed on Facebook. We created six ad sets as follows:

- Men ages 18 - 33 living in Lagos State (below the state's mean male age as measured in Afrobarometer Round 7)

- Men ages 34+ living in Lagos State

- Women ages 18 - 32 living in Lagos State (below the state's mean female age as measured in Afrobarometer Round 7)

- Women ages 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 optimizes ad placement based on who completes the survey (using code embedded in the final comment page of the survey).

2.1.3 Assignment to treatment

Respondents were randomly assigned to all treatments with equal probability, within blocks defined by which Facebook ad set brought them into the survey.

2.1.4 Attrition

In most analyses we will include all responses we have to a given question, even if a respondent later dropped out of the survey. However we will also check robustness to only using completed surveys.

In addition, given the length of the survey instrument, a few lower-priority questions were asked only of those who opted to continue for an additional airtime bonus. These questions are noted in the discussion of variables and analysis below.

2.2 Data Collection

2.2.1 Instruments

The survey was implemented using Qualtrics and includes the following sections:

- Consent

- Eligibility check and basic demographics

- Respondents can only move past this section (and will only be included in the analysis) if they are over 18, a resident of Lagos State, and own at least one property in the state. Partway through data collection we also added a trivial check that showed the number 15 as an image and asked people to enter it, and they could only proceed to the survey if they got this right.
  - To avoid respondents guessing the exact eligibility criteria (even though we do advertise the survey as being for property owners in Lagos upfront) and retaking the survey with the "correct" answers just to get the airtime, we disguise the eligibility check by asking a few other demographics before alerting the respondent to their eligibility.

- Additional baseline demographics

- Attentiveness check

- Identity questions block

- Details on property owned (repeated up to 2x)

- Baseline tax attitudes

- Treatment

- Endline tax attitudes

- Donation option
  - Respondents were given the chance to donate any portion of their airtime incentive to an NGO that works with the poor in Lagos.

- Additional demographics

- Optional extra questions
  - Respondents were given the chance to answer a few additional questions for a small airtime bonus. They could also donate this amount once completed.

2.2.2 Experimental Treatments

There are several embedded experiments in the survey. First, we show a hypothetical vignette in which we vary whether or not a road project touts **(1)** benefits related to property values and economic growth, or **(2)** the provision of services for the population. We made it clear that the story was not real, but also that it was based on the types of projects the government might actually do with tax revenues.

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 revenues from the Land Use Charge.

Second, we varied a prime that was placed above the vignette. One-third of respondents saw a prime related to their national identity, one-third saw a prime related to their sub-national identity, and the rest saw nothing above the road vignette.

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!

Finally, at the end we give respondents an opportunity to donate their airtime reward to an NGO in Lagos with which we partner. We varied whether this donation was said to go help the poor in Nigeria or in Lagos. We do not propose a directional hypothesis for this treatment, but are interested in exploring how stated salient identities related to willingness to support in-group members.

3 Analysis

3.1 Variables

3.1.1 Measures of class

In addition to looking at these independently, these variables will be used to create an index or indicator using dimension reduction based on how well they correlate with one another.

- Lived poverty: frequency gone without enough food, clean water, medicine, gas/fuel, cash income

- Assets: Motor vehicle or motorcycle, computer, bank account, television, generator

- Where they would place themselves on a scale from the poorest to the wealthiest in Lagos State

- A categorical self reporting of class: Wealthy, Between Wealthy and Middle, Middle Class, Between Middle Class and Poor, Poor.

    - Those who selected one of the "between" categories were prompted to select which category they feel closest to

- How many days of the week one goes out to eat at a restaurant (only asked of respondents who wanted to continue to a bonus section with a few extra questions)

- Education

- Salience of class based on identity buckets task

The Cronbach's Alpha for all items (excluding restaurants) is low – only 0.144. However, using factor analysis, we find three components. The lived poverty items load onto on component, assets and education onto another, and the two self-reported class items onto a third. Nothing changes substantively when adding the restaurant item and restricting the sample to just those who continued to the bonus section.

3.1.2 Demographics and other background characteristics

- Year born

- Gender

- Ethnicity

- Religion

- Education

- LGA/LCDA

- Employment status

- State of Origin

- Year moved to Lagos

3.1.3 Background on Property Ownership

- Number of properties

- Whether they have tenants

- LGA/LCDA of up to two properties

- Whether a property is their primary residence

- Whether they received a Land Use Charge Bill for 2021

- Type of building on the property

- Whether the property is in an estate

- When they plan to sell

- Whether they expect to make a profit

- How they acquired their land

- If they bought it, whether they went through an agent

- What types of documents they have for their property

- Biggest benefit to owning property in Lagos (only asked of respondents who wanted to continue to a bonus section with a few extra questions)

3.1.4   Background on Land Use Charge

- Whether they received an Land Use Charge Bill for 2021 (up to two properties)

- Amount of bill (up to two properties)

- Whether they've already paid their bill (up to two properties)

- Whether they asked their tenants to pay their bill (up to two properties)

- What people think the Lagos State Government spends the revenue it gets from the Land Use Charge (LUC) on

- Whether they also pay Personal Income Tax

3.1.5   Identity

- Respondents are asked to distribute 10 points across identity buckets: Religion, Ethnicity, Community where one lives, Class category, Nigerian, Lagosian, Landlord, and opposite gender (included as a placebo category).

- Feeling more Nigerian or more one's ethnicity (question from Afrobarometer)

- What it means to be Lagosian (only asked of respondents who wanted to continue to a bonus section with a few extra questions)

3.1.6   Tax-Related Attitudes and Behaviors

The main dependent variables of interest are marked in bold.

- Who actually benefits from Land Use Charge (100-point scale from poorest to wealthiest, pre-treatment)

- Who should benefit from Land Use Charge (scale from poorest to wealth100-point scale pre-treatment)

- **Support for redistribution** (5-point Likert-type scale, pre and post treatment)

- **Whether Lagos State Government has a right to make people pay** (5-point Likert-type scale, pre and post treatment)

- **Willingness to pay even if government didn't check** (5-point Likert-type scale, pre and post treatment)

- **Perceived willingness of other people taking the survey to pay even if government didn't check** (100-point percentage scale, pre and post treatment)

- **Clicking to access to Lagos State WhatsApp platform for the Land Use Charge** (binary, post-treatment)

For some analyses we will also use an index of tax morale created from three items:

- Whether Lagos State Government has a right to make people pay

- Willingness to pay even if government didn't check

- Clicking to access to Lagos State WhatsApp platform for the Land Use Charge

3.1.7   Donation

- Donation of any portion of survey incentive to a local NGO

3.2   Balance

To check our randomization, we will check for imbalance in treatment assignment across the following pre-treatment covariates: age, gender, whether or not they have a college education, Yoruba or non-Yoruba, and self-reported class (3-categories). We will also check for differential attrition across treatment assignments.

For the prime condition with the values national, subnational, and control, for each condition respondents are balanced across the covariates specified (i.e., there are no significant differences detected between those assigned and not

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3.3 Treatment Effects

3.3.1 Intent to Treat (ITT)

For all treatment effects the basic specification we will use is:

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

Where $Y_{i,post}$ is the post-treatment measurement of the DV, $Y_{i,pre}$ 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 randomize based on which particular Facebook ad variation people enter the survey through. Most outcomes are on a 5-point scale.

We will also estimate:

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

Where X_i are pre-treatment characteristics that are predictive of the baseline outcome or that are unbalanced between treatment groups.

For variables where we don't measure a baseline (e.g., the link clicks outcome) we will estimate:

$$Y_i = D_i + B_i + e_i$$
$$\text{and}$$
$$Y_i = D_i + B_i + X_i + e_i$$

For the binary outcome measure, we will check robustness to logistic regression, in addition to the linear probability model specified above. We will also check robustness to clustering standard errors at the level of the phone number, since respondents sharing the same number may be similar in important ways (and since we cannot completely eliminate the possibility that some people took the survey multiple times). In all analyses we will also check robustness to excluding the block dummies, since there is an equal probability of assignment to each treatment across blocks.

3.4 Heterogeneous Effects

We will look for heterogeneous effects across:

- Where a respondent lives (LGA)

- Whether a respondent has already paid their 2021 property tax

Table 1: Benefit Conditions Main Specification

	Direction of effect (services as baseline)	Statistical Significance (**=p<0.05; *=p<0.10)
Support for Redistribution	-	
Support for Enforcement	+	**
Willingness to Pay	+	
Others Paying	-	
3-item Tax Morale Index	+	
Link Click (LPM)	-	*
Link Click (Logit)	N/A	

Table 2: Benefit Conditions with Clustering Standard Errors by Phone Number

	Direction of effect (services as baseline)	Statistical Significance (**=p<0.05; *=p<0.10)
Support for Redistribution	-	
Support for Enforcement	+	**
Willingness to Pay	+	
Others Paying	-	
3-item Tax Morale Index	+	
Link Click (LPM)	-	
Link Click (Logit)	N/A	

Table 3: Benefit Conditions without Block Dummies

	Direction of effect (services as baseline)	Statistical Significance (**=p<0.05; *=p<0.10)
Support for Redistribution	-	
Support for Enforcement	+	**
Willingness to Pay	+	
Others Paying	-	
3-item Tax Morale Index	+	
Link Click (LPM)	-	
Link Click (Logit)	-	

Table 4: Benefit Conditions: Only Completed Surveys

	Direction of effect (services as baseline)	Statistical Significance (**=p<0.05; *=p<0.10)
Support for Redistribution	-	
Support for Enforcement	+	**
Willingness to Pay	+	
Others Paying	-	
3-item Tax Morale Index	+	
Link Click (LPM)	-	**
Link Click (Logit)	N/A	

- When a respondent plans to sell their property and their expectation of profit

- Baseline measures of outcomes

- Self-reported class and objective measures of class

- Salient identities (identity buckets)

- Who the respondent believes is running the survey (mainly, U.S. University versus the Lagos State Government)

- Whether a respondent gets the factual manipulation check (FMC) correct (for the property values v. services treatment)

- Attentiveness (see more below)

- Whether the respondent is solely an owner-occupiers or is an absentee landlords (or relatedly, whether they own one or multiple properties)

- State of origin (particularly for identity prime)

Because these are exploratory (rather than linked to specific hypotheses), we do not report results in detail here.

3.5 Attentiveness

We also explore attentiveness, in order to improve our understanding of Facebook-recruited samples. We include several attention checks in the survey. First, early on, we ask respondents to select the option "Somewhat disagree" from a Likert-type scale. Second, we ask people to mark the "Classified" and "None of the above" boxes in a question about their favorite newspaper sections to read. We also have a dummy category in an identity task, the opposite gender than what the respondent reports. If someone is paying attention, they should assign 0 points to that category. Finally, we also have a factual manipulation check associated with our randomized treatment. Partway through data collection, we also added an additional screener item to the beginning of the survey to screen out bots or very inattentive respondents, in which respondents had to simply enter a number shown in image format. Those who did not get this right (N = 58) were not allowed to proceed into the survey. We will also look at how attentiveness varies based on whether they've taken a survey on Facebook before, since this is a known issue in U.S. pools of frequent survey takers.

76.0% of respondents passed the "Somewhat disagree" attentiveness check. 34.9% correctly answered the question about favorite newspaper sections. We expect some of this error to be due to confusion rather than inattentiveness, especially since about half (45.8%) reported that they have never taken an online survey via Facebook before, and therefore may be less familiar with this type of check. 47.8% of people correctly placed no identity points on the opposite gender of how they identified in the past. Although it is possible that some
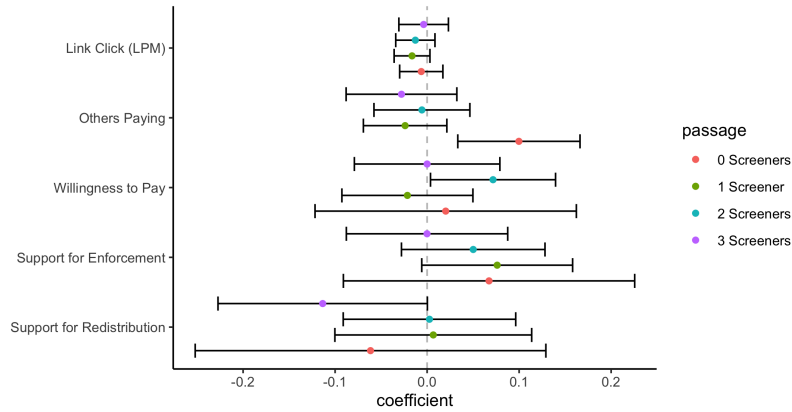
Figure 1: Coefficients broken out by screener passage. Coefficients are standardized (except for the Link Click outcome) for the purpose of plotting. 95% confidence intervals are indicated by the error bars.

Table 5: Benefit Conditions: FMC Passers only

	Direction of effect (services as baseline)	**Statistical Significance** (**=p<0.05; *=p<0.10)
Support for Redistribution	-	
Support for Enforcement	+	
Willingness to Pay	+	
Others Paying	+	
3-item Tax Morale Index	-	
Link Click (LPM)	-	*

respondents truly do identify with both genders, we expect that the extent of this is minimal in this sample. Only one person did not choose male or female in the baseline demographics section, identifying as transgender.

12.7% of respondents got none of the three screener items correct, 19.0% got all three correct, and the remaining 68.3% got one or two correct. There are no significant interaction effects between treatment and screener passage rate. When we break out treatment effects by coefficient, it is difficult to identify any clear patterns (Figure 1).

A slight majority (52.7%) passed the factual manipulation check by correctly choosing what benefit was emphasized. This passage rate was higher among those who saw the services appeal (59.6%) relative to those who saw the growth appeal (48.5%). When we interact FMC passage with treatment, we find no significant difference in treatment effect between those who did and did not pass the FMC.

Having done surveys on Facebook before is negatively correlated with screener passage. Those who report having done survey on Facebook previously, answer

0.21 fewer question right, on average.