

FOR ONLINE PUBLICATION
SUPPLEMENTAL APPENDIX
for
BUILDING STATE AND CITIZEN:
How Tax Collection in Congo Engenders Citizen
Engagement with the State
JONATHAN L. WEIGEL[†]
December 15, 2018

*AEA pre-registration ID: AEARCTR-0001316.

[†]LSE. (email: j.weigel@lse.ac.uk)

Contents

1 Background Information	3
1.1 Other payments to state officials in Kananga	4
1.2 Additional information on property tax compliance	7
1.3 Kamuina Nsapu militia activity in Kananga	10
2 Additional details about the experimental design and measurement strategy	10
2.1 Cross-randomized anticorruption interventions	10
2.2 Sampling and Probability Weights	14
2.3 Additional details about townhall meetings and evaluation card submission	18
3 Coordination mechanism	25
4 Robustness checks	35
4.1 Coefficient plots for sub-variables of indices	42
5 Additional tables and figures referenced in paper	45
6 Exact text of survey questions	51
6.1 Variables used in Paper Section 5.	51
6.2 Variables used in Paper Section 6.	52
6.3 Additional variables considered in Online Appendix	54
7 Data anomalies and violations of the experimental design	54
7.1 Dealing with missingness in house quality data	54
7.2 Violations of randomization of tax program	55
7.3 Violations of random assignment of tax collectors	55

1 Background Information

This appendix section contains background information about the 2016 property tax campaign in Kananga, D.R. Congo. As noted in the paper, random assignment of the program occurred on the polygon level. Figure 1 shows a zoomed-in version of polygons in one part of the city. Polygon boundaries were drawn to approximate roads, ravines, and other landmarks that would be recognizable from the ground.

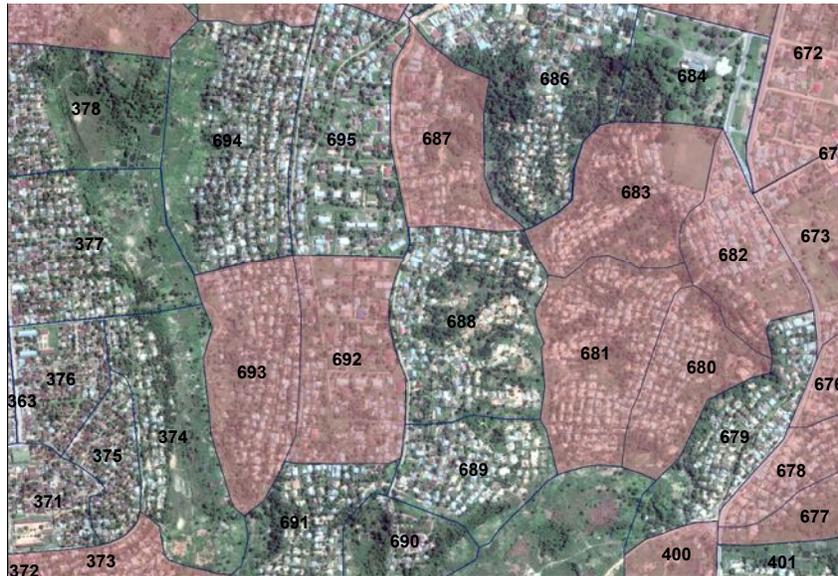


Figure 1: Polygons in Kananga. Red shading indicates assignment to the tax program.

Tax collectors used tablets and handheld receipt printers for the property tax campaign. Examples of receipts can be seen in Figure 2. Receipts were unique and contained the household identification code assigned by tax collectors during the census. Only such printed receipts were considered valid for the campaign.

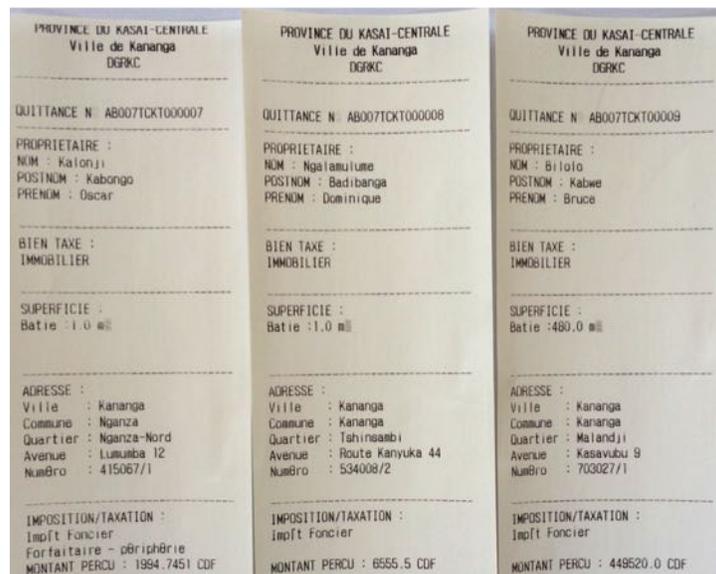


Figure 2: Three examples of printed receipts from the property tax campaign

As noted in the paper, baseline survey respondents reported high expectations for the provincial government in public goods provision. Figure 3 shows the percentage of respondents who thought the provincial government (or another possible provider) should be “primary responsible” for the provision of public goods for each of the sectors indicated below. The provincial government is deemed the principal provide in three sectors (water, welfare, and security) and the second most important provider in three sectors (schools, health, and roads).

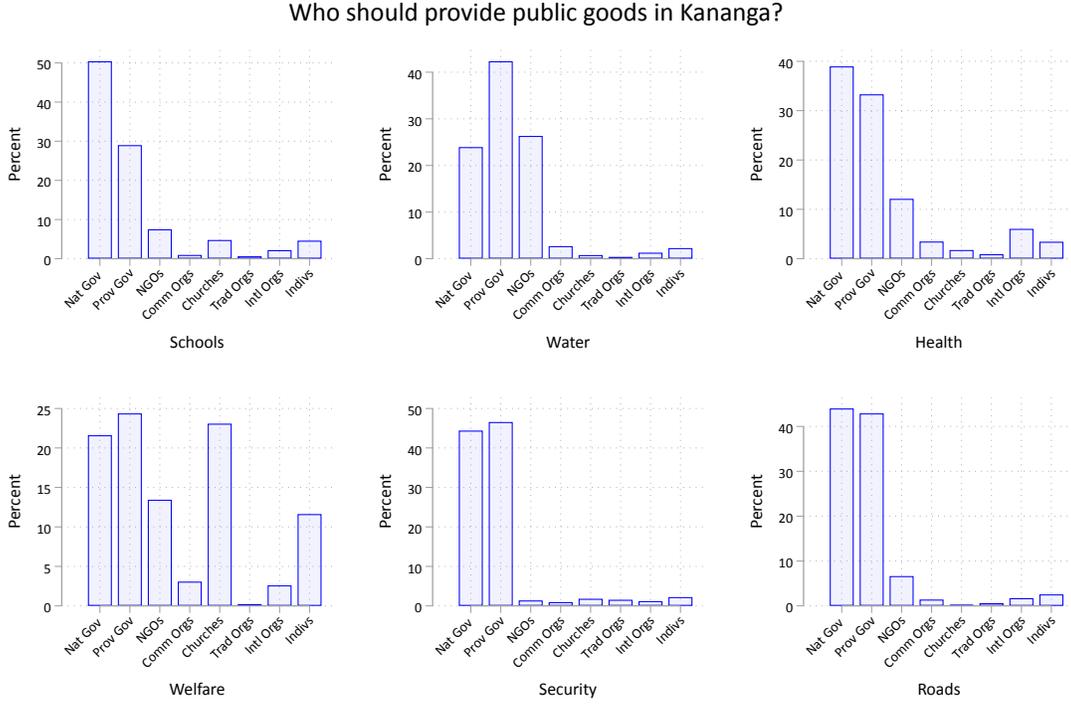


Figure 3: Baseline views of who should provide public goods.

1.1 Other payments to state officials in Kananga

Payment of bribes could create another possible channel through which the program might affect political behavior, as citizens are likely to update their beliefs and expectations about the government in different ways after paying a bribe versus paying a tax (or paying nothing at all). If the program caused an average increase in bribes, for example, citizens might update negatively about the professionalism of the provincial government. To rule out this type of concern, this section demonstrates that the program does not appear to have coherent effects on bribe payment.

Two types of bribes are plausible in this context. First, households might pay the collector a smaller amount than the tax, $b < \tau_1$, where τ_1 in this case is the flat tax rate of 2,000 CF. The collector might accept b in exchange for a promise not to enforce the true rate for the rest of the tax period. The clearest way to measure such bribes is through household self-reports using local codes for bribes. This type of bribe is typically known as paying the “transport” of the tax collector. Alternatively, individuals might speak of making an “arrangement” with the tax collector.¹ The measure of bribe self reports, *Paid bribe*, takes the value of 1 if a participant responds affirmatively

¹Other local codes for bribes include giving the collector a “coffee,” “tea,” “beer,” and “water.”

to either of these questions. The second way to pay a bribe is to pay the collector $\tau_1 + b < \tau_2$, where τ_2 here is the flat tax rate of 6,600 CF. That is, a nicer downtown household that owes 6,600 CF pays the 2,000 CF rate plus a bribe in exchange for “reclassifying” the house to a lower tax rate. *Paid bribe* equals 1 in such cases of reclassification bribes, as well. We also consider effects on the intensive margin, employing the self-reported amount paid in bribes, *Bribe amount*, as the dependent variable.

Measurement error is always a concern when asking about bribes. However, paying small bribes like these is not taboo in this context. In another project on bribe payment at Kananga’s roadway tolls, up to 50% of participants openly told enumerators that they bribed the toll officer to avoid paying the full amount (Reid and Weigel (2017)). Nonetheless, to assuage concerns about a self-reported bribe measure, two other measures of bribes will be considered as dependent variables. First, *Others bribe* is the perceived frequency of bribe payment among other households on the respondent’s street. As with many of the survey-based measures used in this paper, *Others bribe* is standardized to facilitate interpretation of the magnitudes of estimated coefficients. Second, *Going rate* is the respondent’s estimate for the ‘going rate’ of bribes: how much would you have to give the tax collector so that he/she will pass to the next house? These measures of bribes are analogous to those used in Khan et al. (2015).

Table 1 shows the average effects of the program on bribe payment. No coherent pattern emerges. Although the point estimate on *Program* is positive and significant when *Others bribe* is the dependent variable, suggesting perhaps an increased perception that other people are paying bribes, the corresponding estimate for the going rate of bribes is not significant. Nor are the point estimate for the household bribe payment indicator. There is even a marginally significant decrease in reported bribe amounts due to the program. Further evidence comes from considering participants’ beliefs about why many people in Kananga do not pay the property tax. Of the seven reasons evaluated by participants, bribe payment was considered the least important (see Figure 5), reinforcing the plausibility of the low measured incidence of bribes in this setting.

Table 1: No coherent effect on bribe payment

	Paid bribe	Bribe amount	Others bribe	Going rate
Program	0.000 (0.006)	-23.856* (12.628)	0.091* (0.048)	7.192 (49.964)
Covariates	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes
R^2	0.017	0.016	0.051	0.070
Observations	2913	2913	2046	2566
Clusters	356	356	343	356
ControlMean	0.023	36.345	-0.023	710.341

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: *Paid bribe* is an indicator for individuals’ self-reported bribe payments using local codes for bribes. It also equals 1 in the case of ‘reclassification’ bribes. *Bribe amount* is self reported amount paid in bribes. *Others bribe* is a standardized variable increasing in the perceived frequency that one’s neighbors are paying bribes instead of the property tax. *Going rate* is the estimated amount of money (the ‘going rate’) that it would take to bribe a tax collector in lieu of paying the property tax.

Some readers thinking of Congo, a paradigmatic ‘kleptocracy’, might be puzzled by this null

result.² However, two points about the context make the null effects on bribes understandable. First, collectors have little coercive power in this context. This is most clearly exhibited by the low compliance rate (about 11%) in program polygons. Although there is evidence that differences in the perceived probability of sanctions of tax evaders explains some of the variation in compliance, by far the modal response to receiving tax collectors at one’s door was not to pay.

Second, this bribe-payment scenario differs from the typical case in which a citizen demands a service—an official document, or passage through a toll, for example—from a bureaucrat. In such settings, paying a bribe can be less costly than paying the full price for the service; it can also simply speed up the process and cut through bureaucratic red tape (Banerjee et al. (2012)). However, in this case, the citizen does not demand anything from the tax collector. If the citizen deems the probability of punishment for evasion lower than some threshold based on his risk preferences, he chooses to evade. Moreover, in the typical case, the bureaucrat typically with lower opportunity cost of time than the citizen. The bureaucrat can strategically delay or threaten other procedures and feeds — endogenous red tape — to increase the likelihood that the citizen will pay a bribe to speed up the process. In this setting, by contrast, it is the citizen who has the lower cost of time, while the collector is charged with tax collection for hundreds of other houses in the polygon. The citizen may even employ the same delay strategy to *avoid* paying the collector. Given these differences from the standard bribe-payment set up, it is not surprising that we see low rates of bribes paid across control and program polygons.

As for other formal and informal payments made to the state in Congo, enumerators administered a survey module asking respondents about a series of such payments. The exact question text was as follows: “Now, outside of the property tax campaign of 2016, I’d like to ask you about other payments that citizens pay to the state here in Kananga. By this, I mean formal payments (such as taxes, fees, and other payments for official documents) and informal payments (such as small amounts of money given to officials for transport, water, coffee, tea, etc). In 2016, did you make any other formal or informal payments to the state?” Enumerators then asked respondents individually about each of the following taxes or fees: vehicle tax, rental tax, capital tax, income tax, any transportation tax, authorization for selling alcohol, tobacco, cement, or sugar, authorization for pharmacies, mining tax, toll tax, authorization for urban transport, commercial fee for raising or selling animals, commercial fee for the sale of agricultural products, commercial authorizations, motorcycle tax, vender permit, insurance permit. Again, estimated rates of payment of formal and informal payments to state officials are lower than those reported in other work, such as Paler et al. (2016). Only 8.8% of the sample said they made any such payments in 2016. The most common payments are vender permits and the motorcycle tax. Among those who say they made other formal or informal payments to the state in 2016, the median respondent paid about \$15. However, if you include all those who said they did not make any such payments, the median drops to \$0.

²In fact, I anticipated an increase in bribe payment in my pre-analysis plan, and I implemented two cross-randomized anticorruption interventions to try to reduce bribe payment in certain polygons (described in Section 2.1). It is worth noting, however, that an alternative explanation for the low rate of bribes is that collectors did not trust or understand which polygons would be ‘audited’ and which polygons would not be audited. Independent audits of tax collection was one of the cross-randomized anticorruption interventions. They were conducted in half of the program polygons. Which polygons were to be audited was known to collectors in advance: on their assignment sheets, next to the name of the polygon was a column showing the audit status - ‘yes’ or ‘no’. However, if collectors simply assumed every polygon would be audited and so reduced bribe taking in all polygons, this could also explain the null result on bribes.

1.2 Additional information on property tax compliance

This section provides more information about tax compliers — that is, individuals who were moved to pay the property tax because of the program. A complete treatment is beyond the scope of this paper but addressed in a companion paper (Weigel, 2018). First, Table 2 contains the raw data on tax compliance. We can see the roughly 10 percentage point increase across treatment and control polygons.

Table 2: Tax payment in endline sample

	Nonpayers	Payers	Compliance
Control	1428	8	0.55%
Program	1915	228	10.63%
Total	3353	236	6.58%

Notes: Payment rates among endline participants in polygons assigned to the tax collection program or assigned to control.

To characterize tax compliers, Table 3 first reports several ratios that shed light on complier characteristics in the spirit of Abadie’s (2003) κ -weighting method.³ These are the ratio of the first stage for individuals of the characteristic to the overall first stage. Tax compliers are more likely to be male, educated, wealthy, employed, and to work for the government in some capacity.

Figures 4 and 5 contain endline survey evidence about the perceived reasons why individuals in Kananga do and do not pay the property tax, respectively. The reasons deemed most important include (i) avoiding punishment, (ii) doing one’s duty as a citizen, and (iii) promoting the development of the province. Concerning why many people in Kananga do not pay the tax, the reasons deemed most important include (i) that the government provides too little in the way of public goods to justify tax payment, and (ii) people have no money to pay the tax.

Individuals’ prior beliefs, measured at baseline, also affect the probability that they comply with the property tax. Individuals who perceive a higher ex ante risk of punishment are more likely to pay, as are individuals who view the government as a more credible provider of public goods. These results support models of tax compliance that emphasize a simple cost-benefit analysis of whether to pay taxes. However, “tax morale” appears to play an equally large, if not larger, role in citizens’ decisions whether or not to pay taxes (Luttmer and Singhal (2014)). Social pressure, on the other hand, does not factor into the tax compliance function — an unsurprising fact given that social norms about payment likely take time to form. These results are discussed in Weigel (2018).

³Abadie A (2003) "Semiparametric Instrumental Variable Estimation of Treatment Response Models," *Journal of Econometrics* 113, 231-63. See also the discussion in Angrist and Pischke (2000) on p. 171.

Table 3: Complier characteristics

	Complier characteristic ratio
Age above median	0.999
Migrant	0.974
Majority ethnic group (Luluwa)	0.969
Literate	1.194
University graduate	1.223
Income above median	1.279
Wealth above median	1.308
Has electricity	1.549
Unemployed	0.868
Business owner	0.859
Government worker	1.314
Paved or improved road outside house	1.102
Public lighting outside house	1.169

Notes: Complier characteristic ratios (the first stage for individuals of the characteristic over the overall first stage).

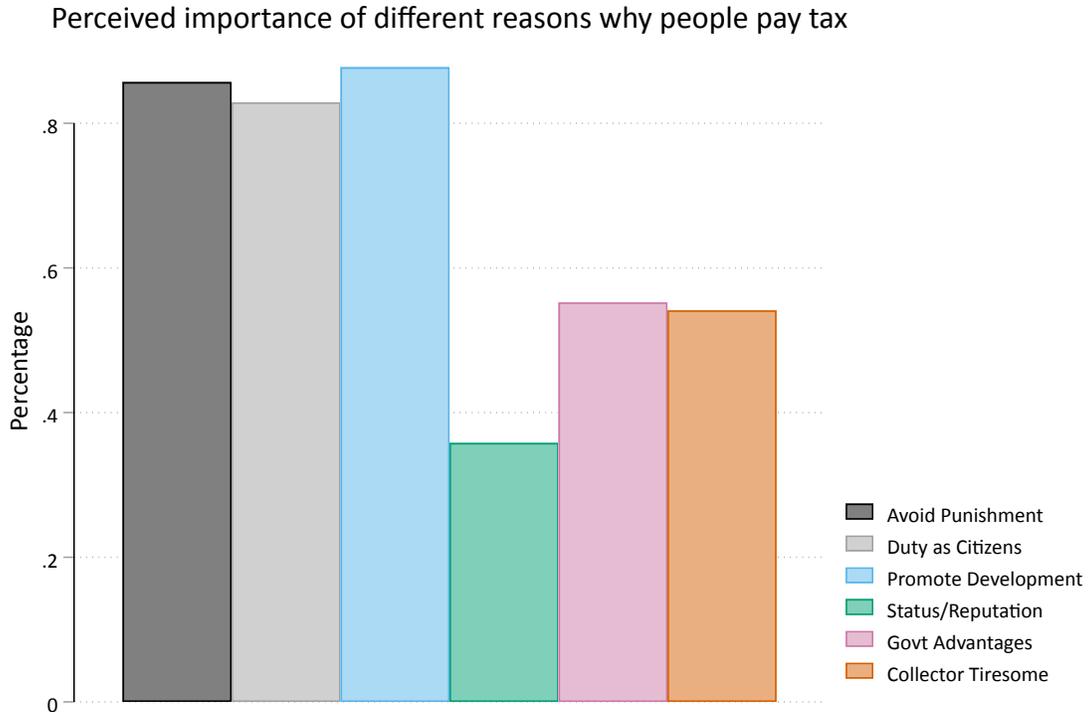


Figure 4: Percentage of respondents who deemed the above reasons ‘very important’ or ‘important’ in explaining why some people pay the property tax.

Perceived importance of different reasons why people evade tax

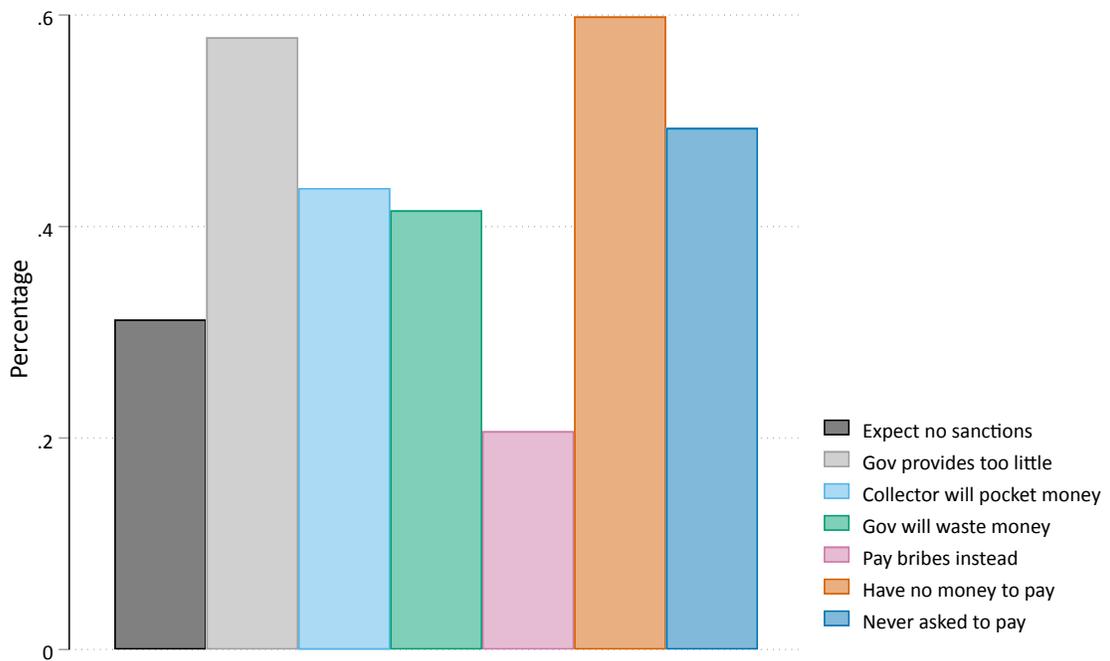


Figure 5: Percentage of respondents who deemed the above reasons ‘very important’ or ‘important’ in explaining why some people evade the property tax.

1.3 Kamuina Nsapu militia activity in Kananga

In August 2016, a clash between the national police and a customary chief in Dibaya territory led to the death of the chief and the beginning of the Kamuina Nsapu militia movement. Although the group’s demands were triggered by local grievances, very shortly the Kamuina Nsapu evolved into a broader protest movement against the national government. In December 2016, President Joseph Kabila did not step down at the end of his constitutionally mandated term. Protests shook Kinshasa and many cities across Congo, and the Kamuina Nsapu took up arms with a vengeance. A cycle of tit-for-tat violence between the army and the Kamuina Nsapu left thousands dead and hundreds of thousands displaced.⁴

These unfortunate events do not affect the internal validity of the research design, as the randomization nets out any broader trends that affect the city as a whole. But data collection was more difficult as a result. In particular, the research team could not administer endline surveys in one commune (Nganza), representing approximately 16.4% of the intended sample, in which the conflict was most acute.⁵ This loss of sample means the analysis is not powered as anticipated.

The conflict must also inform the interpretation of the external validity of results concerning attitudes toward the provincial government. Although directives to the military and police come from the national government according to the official chain of command, citizens also blame the provincial government for the conflict that marred the province. My prior is that the instability would lead causal effects of the tax program to be more muted. With the threat of violence top of mind, changes in beliefs induced by the tax program may be less salient. But it is also possible to imagine the violence interacting with the effects of the tax program in other ways, too. As with all randomized controlled trials, the reported results should be taken as valid in this context only; further research is needed to make clear statements about external validity.

2 Additional details about the experimental design and measurement strategy

2.1 Cross-randomized anticorruption interventions

This study also included two cross-randomized interventions targeting corruption. First, there is a standard government audit treatment. In half of the neighborhoods that received the the program, quarterly reports from surveys conducted by independent enumerators were shared with tax ministry leadership. These reports compared official program data to households’ self reports to estimate if money is missing from each selected neighborhood. Tax collectors were informed — verbally and on their assignment sheets — which of the neighborhoods were to be audited before starting collection. During the initial tax collector training, tax ministry leadership pledged to sanction collectors found to be pocketing money during the campaign. The fear of such sanctions

⁴ReliefWeb, “Briefing: The conflict in Kasai, DRC.” July 31, 2017. See <http://reliefweb.int/report/democratic-republic-congo/briefing-conflict-kasai-drc>.

⁵This commune is home to many migrants from Dibaya, where the Kamuina Nsapu movement originated. As such, it has been the focal point of the conflict in Kananga, even though the majority of the violence occurred in rural areas outside the city.

could increase honesty in audited polygons if these threats are credible. Independent enumerators also collected information in non-audited, treated polygons and in control polygons. But the research team did not transmit this information to the government.

Second, a citizen-level information treatment was also cross-randomized in all polygons. During administration of a short baseline survey before tax collection began, enumerators handed out fliers in French (spoken by everyone with some schooling) and Tshiluba (the most widely spoken local language) to every fifth house in the city. There were two versions of this flier. The control flier (Figure 7) announced that tax collectors would be starting this campaign in the coming months to help boost revenues for the government’s development policies. The treatment flier (Figure 6) contained the same information plus (1) the tax rate that households face, and (2) a photograph of the type of printed receipt households should receive upon payment under the new program. Could simply providing citizens information about the tax rate and the collection procedure offer an inexpensive way to reduce corruption? This intervention seeks to answer this question.

Half of all polygons (taxed and non-taxed) were selected to receive the flier with more information. Such information should limit the ability of collectors to take advantage of the information asymmetry associated with the roll out of a property campaign for the first time. If a collector claims that a citizen owes an artificially high rate, the citizen should detect the lie and may demand the true rate. Moreover, simultaneously intervening on the citizen-side and the collector-side in a tax-collection transaction creates an opportunity to test for complementarities between these approaches to reduce corruption.

Key baseline covariates were balanced across the relevant treatment and control groups for these anticorruption interventions, as shown in the pre-analysis plan. Additionally, within the endline sample, receipt of the treatment flier is balanced across individuals in program and control polygons. A difference in means tests fails to reject the null of equivalence ($t = -0.91$). Table 4 summarizes the three interventions (the on-the-ground tax program, audits, and informational fliers).

	Program		
	Audit	No Audit	Control
Info	65	62	88
No Info	60	66	90

Table 4: Polygons (clusters) in each treatment cell

NOTICE

Please take note of the following information:

- The DGRKOC collectors will start to collect property and rental taxes this year. They might come to your household for this reason in the following months.
- The amount due for the property tax is 2,000 CF, unless you live in a large house or a multi-storied house. The property tax should be paid only one time per year.
- The amount due for the rental tax is 20% of monthly rent, retained at the source. The rental tax should be paid each month.
- The DGRKOC tax collectors should give you a receipt printed by a portable printer in front of you. See the example to the right. You have the right to ask for such a receipt to avoid paying two times.
- The money that they collect will support the efforts of the provincial government to secure the province, to kickstart economic development, and to protect the well being of the population of Kasai Central.
- If you have any questions or complaints, please contact 0827316243 or 0974982998. These are the telephone lines of Harvard-RDC, an independent NGO of scientific researchers who will transmit your messages to the leaders of the DGRKOC and to the governor. They will keep your identity confidential.

EXAMPLE RECEIPT

PROVINCE DE KASAI CENTRAL Ville de Kananga DGRKOC	

QUITTANCE N 001TCK1000001	

PROPRIETAIRE :	
NOM :	Mutombo
POSTNOM :	Dikembe
PRENOM :	Jean-Jacques

BIEN TAXE :	
IMMOBLIER	

SUPERFICIE:	
Batie:	20m ²
Non batie:	10m ²

ADRESSE:	
Ville	: Kananga
Commune	: Kananga
Quartier	: Malanji
Avenue	: Goma

IMPOSITION/TAXATION:	
Impôt Foncier	
Forfait	
MONTANT PERCU: 2.000 FC	

Designed by Hologram (HIDS)	

Figure 6: Treatment flier for information intervention.

NOTICE

Please take note of the following information:

- The DGRKOC collectors will start to collect property and rental taxes this year. They might come to your household for this reason in the following months.
- The money that they collect will support the efforts of the provincial government to secure the province, to kickstart economic development, and to protect the well being of the population of Kasai Central.
- If you have any questions or complaints, please contact 0827316243 or 0974982998. These are the telephone lines of Harvard-RDC, an independent NGO of scientific researchers who will transmit your messages to the leaders of the DGRKOC and to the governor. They will keep your identity confidential.

Figure 7: Control flier for information intervention.

2.2 Sampling and Probability Weights

As noted in Section 3 in the paper, the endline sample consisted of two subsamples.

1. *House quality sample*: Participants selected randomly during the screening survey and then sampled with higher probability because their houses were of higher-than-average quality for the polygon.
2. *Random sample*: Participants selected randomly during the screening survey and then randomly selected again for the endline survey.

Field-based random sampling for the screening survey was achieved by assigning enumerators to skip patterns to follow in the polygon: e.g. visit every X^{th} house, where X was calculated using an estimate of the total number of compounds in the polygon to arrive at a roughly even number of total surveys per polygon (20 for the endline screening survey). Enumerators followed the skip pattern until they walked up and down every street in a polygon, often exceeding the target number of surveys.

After enumerators had randomly administered roughly 20 screening surveys, recording basic household attributes and the eligibility of potential participants, I selected a subsample of eligible participants in Stata. Relatively higher quality houses (e.g. those built with modern materials other than mudbricks) were selected with somewhat higher probability to enable subsequent analysis exploiting heterogeneity by house quality, as pre-registered in the analysis plan. Such houses are relatively scarce in Kananga, so they were sampled with higher probability to ensure enough would appear in the sample to enable the heterogeneity analysis. In addition, 2-5 random draws were also added to the subsample in every polygon. Rules for sub-sample selection are summarized in Table 5.

Specifically, for each potential respondent in the screening survey sample, I calculated a house quality index based on objective characteristics of the compound—the roof, walls, the number of total buildings, and the accessibility to a primary or secondary avenue—and the subjective assessment of house quality conditional on the polygon.⁶ The top k participants (by estimated house quality) were added to the subsample, where k is given by the second column of Table 5, the “household quality sample.” Among the remaining potential respondents in the screening survey sample, l were chosen, where l is given by the third column in Table 5, the “endline random sample.”⁷ Because the higher quality houses have already been chosen, the average house quality will be lower in this third subsample.

In addition to the endline sample, enumerators sought out eligible baseline participants at endline. Baseline participants were eligible if they were both property owners and household heads (or their spouses).⁸ Within this baseline repeat sample, attrition was 49.8%. High attrition in this tracked

⁶I included subjective house quality to account for subtle variation in house quality that will not be picked up by coarse measures such as whether the roof is made of sheet metal or cement.

⁷The complete Stata script will be available among the replication files on my website upon publication.

⁸The baseline survey was conducted with property-owners and renters because initially the campaign had intended to include collection of both the property tax and the rental tax. However, the rental tax was dropped for the first half of the campaign because the tablet application could not issue the appropriate receipts. When it was reintroduced, collectors devoted little time to this tax. Indeed, rental tax receipts account for less than 5% of total revenues generated by the tax campaign. Moreover, the ultimate liability of the rental tax is uncertain. By law, renters are supposed to deduct 20% of monthly rent and pay this sum to the government. However, often landlords insist that the renter pay the full rent, the rental tax deduction notwithstanding. As such, although by law the

sample chiefly reflects the fact that the conflict in Kasai caused considerable migration within and from Kananga in the 10-15 months between the baseline and endline surveys.⁹ Relative to attritors, baseline participants found at endline are more likely to be male, educated, to have higher-than-average monthly income, to work for the government, to know the name of the tax ministry, to report past household visits from tax collectors, to report high levels of political participation, and to report low levels of perceived government corruption (see Figure 10). They are also more likely to hail from treated polygons (see Paper Appendix Figure ??). These systematic differences are concerning because they are indicative of a process of endogenous selection. However, this sample will be only be considered in secondary analyses that hinge on the time dimension.

Table 5: Choosing the subsample of endline participants

Repeat baseline sample	House quality sample	Random sample	Total
5	7	2	14
4	7	3	14
3	8	3	14
2	8	4	14
1	9	4	14
0	9	5	14

Notes: Schedule of participants from house quality sample and endline random sample, according to the number of repeat baseline participants per polygon.

The result of this procedure is a slightly higher proportion of relatively wealthier houses in the endline sample. Figure 8 demonstrates this shift graphically: the endline sample is slightly to the right of the full screening survey sample in the house quality index described in the previous paragraph.

Because of this sampling process, and because we sample roughly the same number of individuals from polygons with different total populations, the (unweighted) estimates reported in the paper are not fully representative of Kananga, but rather for a slightly better-off sub-population of the city. In the robustness tables that follow, however, we include specifications with probability weights to account for the higher proportion of relatively wealthy individuals in the endline sample.

Weights are constructed in two steps. First, for each individual i with house quality x in polygon j , we estimate a weight, w_{ij}^{within} , to adjust for the higher selection probability for relatively high quality houses:

$$w_{ij}^{within} = \frac{f_j^{pop}(x_i)}{f_j^{samp}(x_i)} \quad (1)$$

where $f_j^{pop} \sim N(\mu_j^{pop}, \sigma_j^{pop})$, $f_j^{samp} \sim N(\mu_j^{samp}, \sigma_j^{samp})$, and the μ_j 's and σ_j 's reflect polygon-level empirical means and standard deviations, respectively.¹⁰ Second, a between-polygon weight is

incidence of the tax falls on landlords, in practice it may fall on renters. Moreover, essentially no private individuals make this payment, nor are they solicited by the government for it. Rental taxes are only enforced among shops and businesses in downtown Kananga. For all of these reasons, renters were excluded from the analysis, as specified in the analysis plan. We seek to estimate the effect of the program on the population of property owners in Kananga.

⁹Another common cause of attrition involved baseline respondents who were not the household head (or spouse) but another member of the household head's family. I excluded these individuals so that re-sampling of baseline participants would be analogous to sampling procedures used to construct the endline sample.

¹⁰I tried using the empirical densities rather than relying on parametric assumptions, but the resulting weights had large numbers of extreme values. Imposing a normal distribution on polygon-level house quality is at least

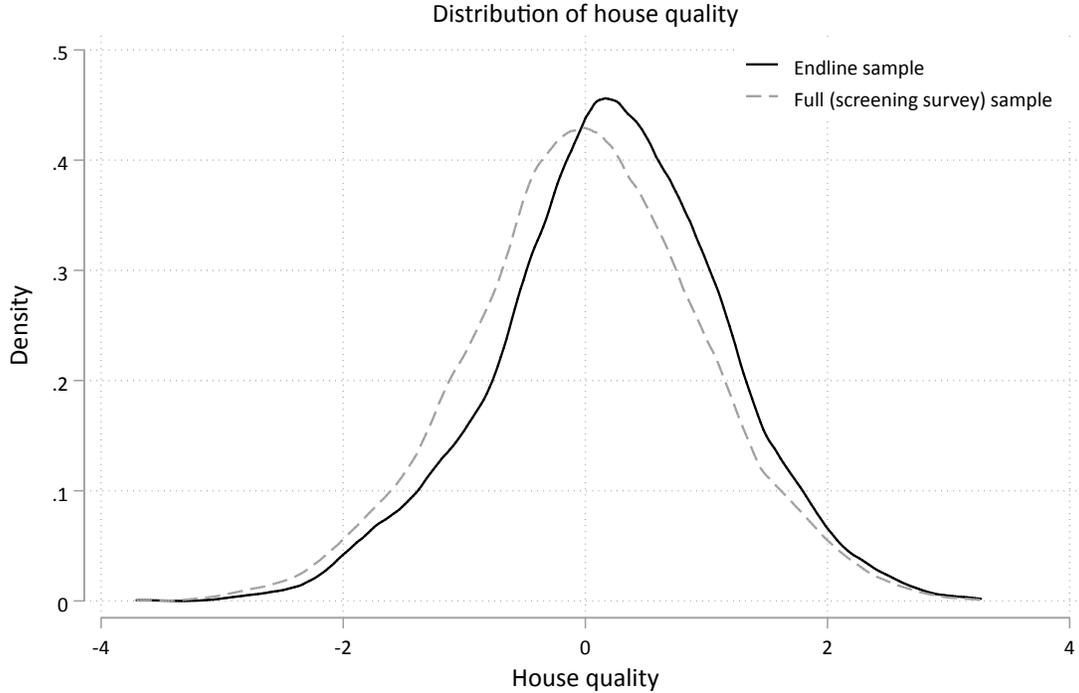


Figure 8: Densities of estimated house quality for the endline sample and the full screening survey sample.

constructed to account for the fact that the number of individuals in the endline sample is (roughly) constant across polygons but polygons themselves have different numbers of property owners. This weight is simply:

$$w_j^{between} = \frac{n_j^{screening} / N}{n_j^{endline} / n} \quad (2)$$

where N is the total number of property owners in Kananga, and n is the total number of property owners in the endline sample. The two weights are then multiplied together and normalized to generate a probability weight that is used in regressions in Section 5. Figure 9 shows the distributions of the ultimate weights. As expected, individuals in the “endline random sample” receive the most weight because they are on average of lower house quality and thus underrepresented in the endline sample. By contrast, the “household quality sample” receives the least weight because these high-house-quality individuals are overrepresented in the endline sample. Using these weights in the main analyses does not substantially alter the results. However, for completeness, every robustness table that follows contains a specification with weighted estimates.

justified by the empirical distributions of house quality taken in the full endline and screening survey samples (Figure 8).

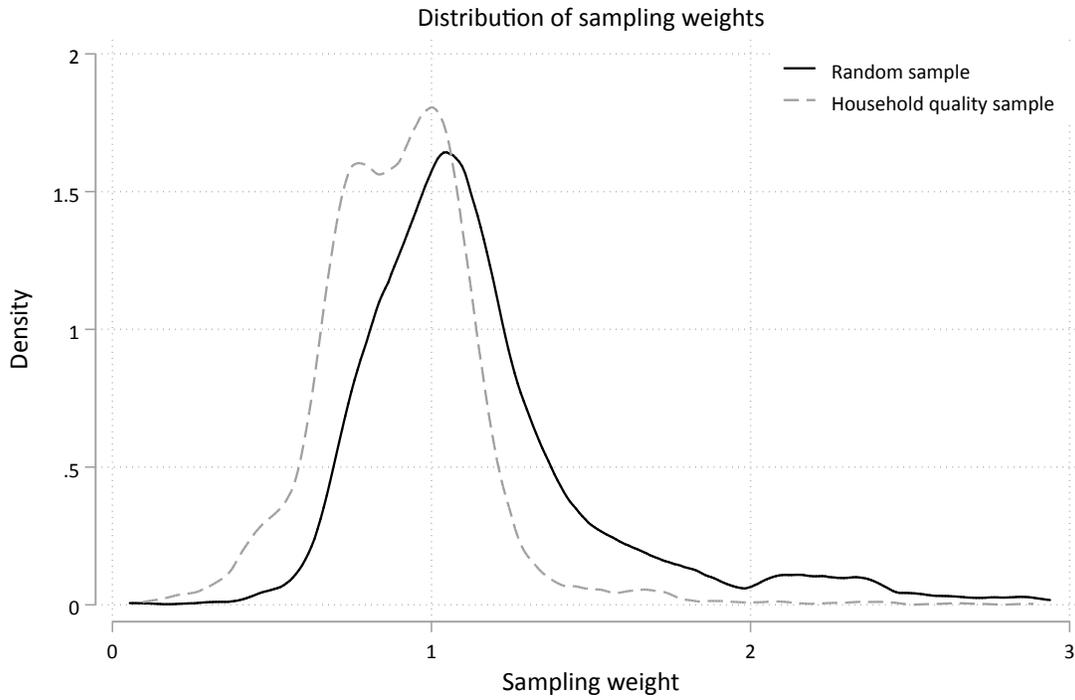


Figure 9: Distributions of the weights for the three subsamples of the endline sample.

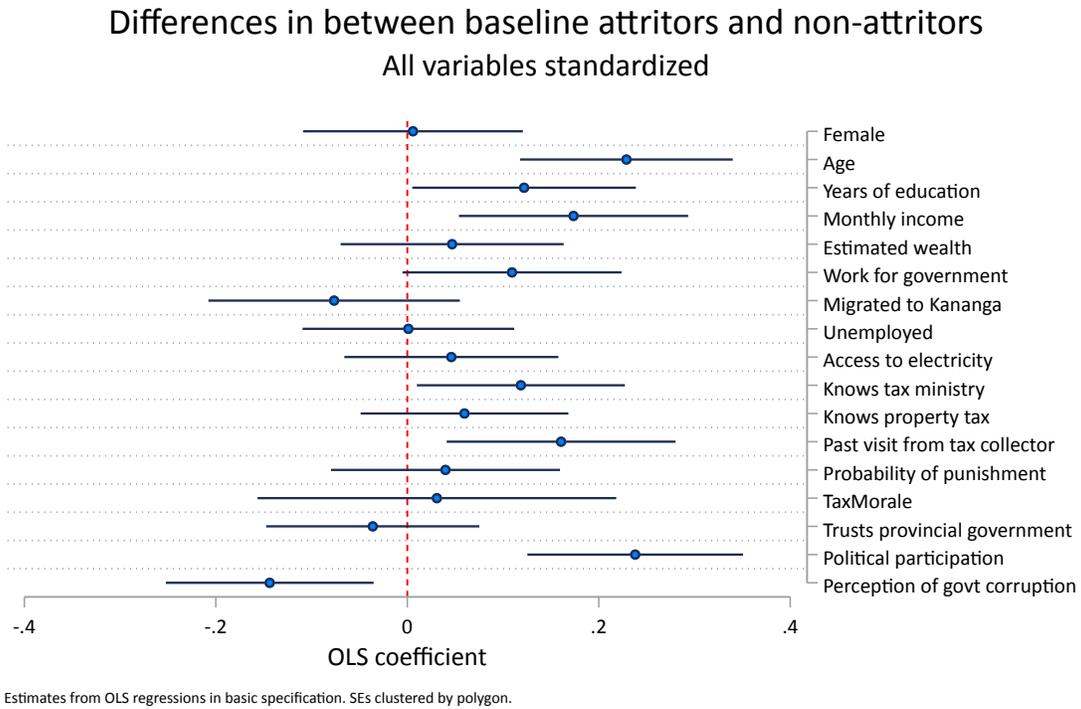


Figure 10: Differences in observables between attriters and non-attriters in repeat baseline sample.

2.3 Additional details about townhall meetings and evaluation card submission



Figure 11: Invitation to townhall meeting held at Kananga’s Provincial Assembly building on February 20, 2017.

All townhall meetings took place in the provincial assembly building, as shown in Figure 13. The location of the meeting is shown on the map in Figure ???. The full text of the invitations in English reads as follows. “You are invited to a meeting on taxation in the presence of certain members of the Provincial Government of Kasai Central. This meeting will take place on the [DATE] at 10am in the Plenary Room of the Provincial Assembly. To ensure the meeting goes smoothly, please arrive by 9am. Code to present at the entry: [CODE]. Without this invitation, entry to the Plenary Room will not be possible. So please don’t forget to bring this invitation with you.”

Enumerators confirmed the identity of participants who showed up at the Provincial Assembly building by comparing code-specific headshots on the tablet to the individual at the townhall meeting. In 24 cases (4.9% of participants), the spouse of the respondent showed up instead of the respondent. (In almost all of these cases, the husbands of female respondents came in the place of their wives.) Because the spouse’s participation also indicates costly effort on the part of the household, these individuals are coded as turning out in the main analysis. However, the results are robust to coding these individuals as no-shows.

The full text of the questions on the evaluation card, inspired by (Paler, 2013), is as follows: “First, please choose which of the following options you agree with most: (1) I am satisfied with the Provincial Government of Kasai Central and don’t want to change anything about how it works, (2) I want the Provincial Government of Kasai Central to do a better job. Now please indicate if



Figure 12: Photograph of townhall meeting in Kananga’s Provincial Assembly building on January 30, 2017.

you strongly agree, agree, disagree, or strongly disagree with the following propositions. (1) The provincial government should provide more opportunities for public participation in provincial government decisions. (2) The provincial government should provide better and easier access to information about provincial government programs and policies. (3) The Provincial Government of Kasai Central should spend more money on public goods and development and less money on administration. (4) The provincial government should provide a central location where I can freely report problems with public services.”



Figure 13: Provincial Assembly building (Capitole) in Kananga, the location of the townhall meetings. Photo credit: CAID 2016.

Table 6: Frequent words in evaluation comments

Order	Program	Control
1	Government	Government
2	Provincial	Provincial
3	Should	Province
4	Work	Development
5	Population	Population
6	Province	Should
7	Better	Work
8	Roads	Roads
9	Good	People
10	Kasai	Water
11	Central	Improve
12	People	Good
13	Water	Policies
14	State	Electricity
15	Public	Goods
16	Erosion	Leaders
17	Electricity	Social
18	Country	Citizens
19	Needs	Love
20	Agents	Economic

Notes: The 20 most common substantive words on written-in comments of submitted evaluations. Words common to both lists shown in bold.

Carte de suggestion Code :

Cochez les réponses qui correspondent à votre choix

A. Veuillez choisir le point de vue avec lequel vous êtes d'accord :

1 : Je suis satisfait avec le Gouvernement Provincial du Kasai Central et je ne veux pas changer quelque chose à propos de ses opérations Critical

2 : Je voudrais que le Gouvernement Provincial du Kasai Central fasse mieux son travail.

B. Maintenant veuillez m'indiquer si vous êtes complètement d'accord, d'accord, pas d'accord, pas du tout d'accord avec les propositions suivantes :

<p>Le Gouvernement Provincial doit faciliter la participation de ses citoyens à ses décisions.</p> <p><input type="checkbox"/> Complètement d'accord <input type="checkbox"/> D'accord <input type="checkbox"/> Pas d'accord <input type="checkbox"/> Pas du tout d'accord</p>	<p>Le Gouvernement Provincial doit dépenser plus d'argent sur les biens publics et moins d'argent sur l'administration.</p> <p><input type="checkbox"/> Complètement d'accord <input type="checkbox"/> D'accord <input type="checkbox"/> Pas d'accord <input type="checkbox"/> Pas du tout d'accord</p>
<p>Le Gouvernement Provincial doit fournir plus d'accès aux informations sur ses programmes</p> <p><input type="checkbox"/> Complètement d'accord <input type="checkbox"/> D'accord <input type="checkbox"/> Pas d'accord <input type="checkbox"/> Pas du tout d'accord</p>	<p>Le Gouvernement Provincial doit créer un endroit en ville où je peux signaler les problèmes en rapport avec les services publics.</p> <p><input type="checkbox"/> Complètement d'accord <input type="checkbox"/> D'accord <input type="checkbox"/> Pas d'accord <input type="checkbox"/> Pas du tout d'accord</p>

Commentaire : Commented

Figure 14: Annotated (in red) evaluation card in French. A Tshiluba version was printed on the other side. ‘Critical’ indicates the disapproving response to the first question on the evaluation card, and ‘Commented’ indicates where some respondents wrote additional suggestions to the government. Critical and commented evaluations are examined in Online Appendix Table 16.



Figure 15: Suggestion box in downtown Kananga.

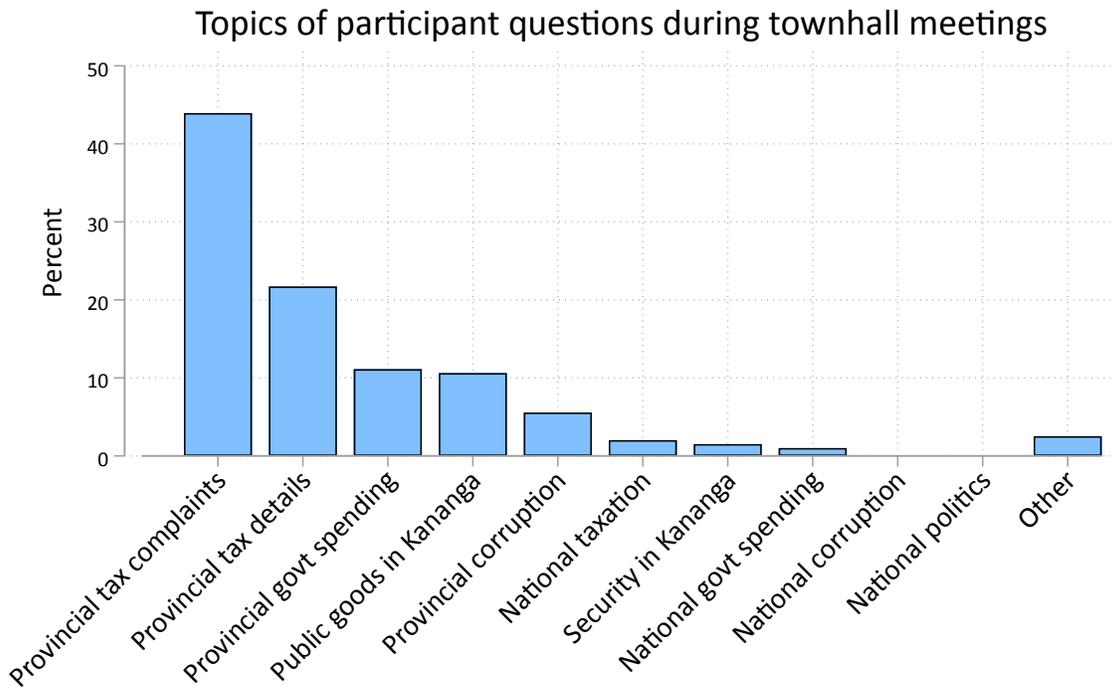


Figure 16: Topics of participants' questions and suggestions during townhall meetings in Kananga.

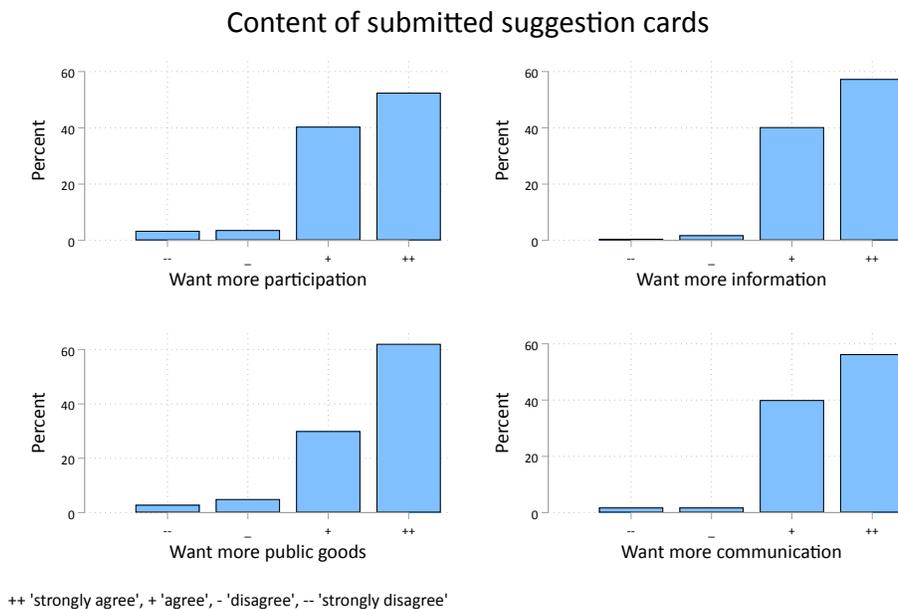


Figure 17: Content of submitted evaluations.

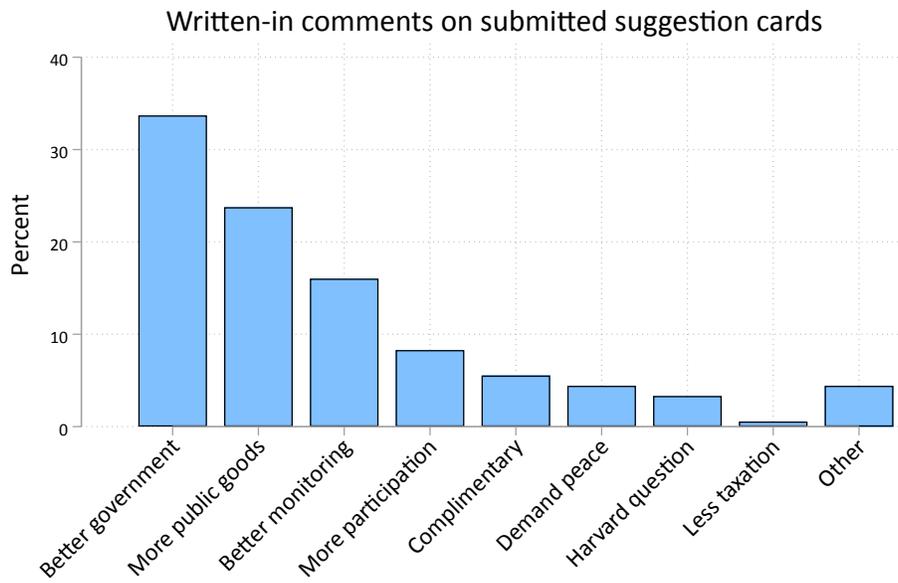


Figure 18: Written-in comments on submitted evaluation cards.

3 Coordination mechanism

This section tests the plausibility of a mechanism in which the tax campaign boosts participation by stimulating communication and lowering the costs of coordination.

Figure 19 shows the intensity of participation by neighborhood, and Figure 20 shows participants' household locations within polygons. There are no obvious patterns that suggest enhanced collective action in treatment neighborhoods — such as participant households being more clustered geographically, for example.

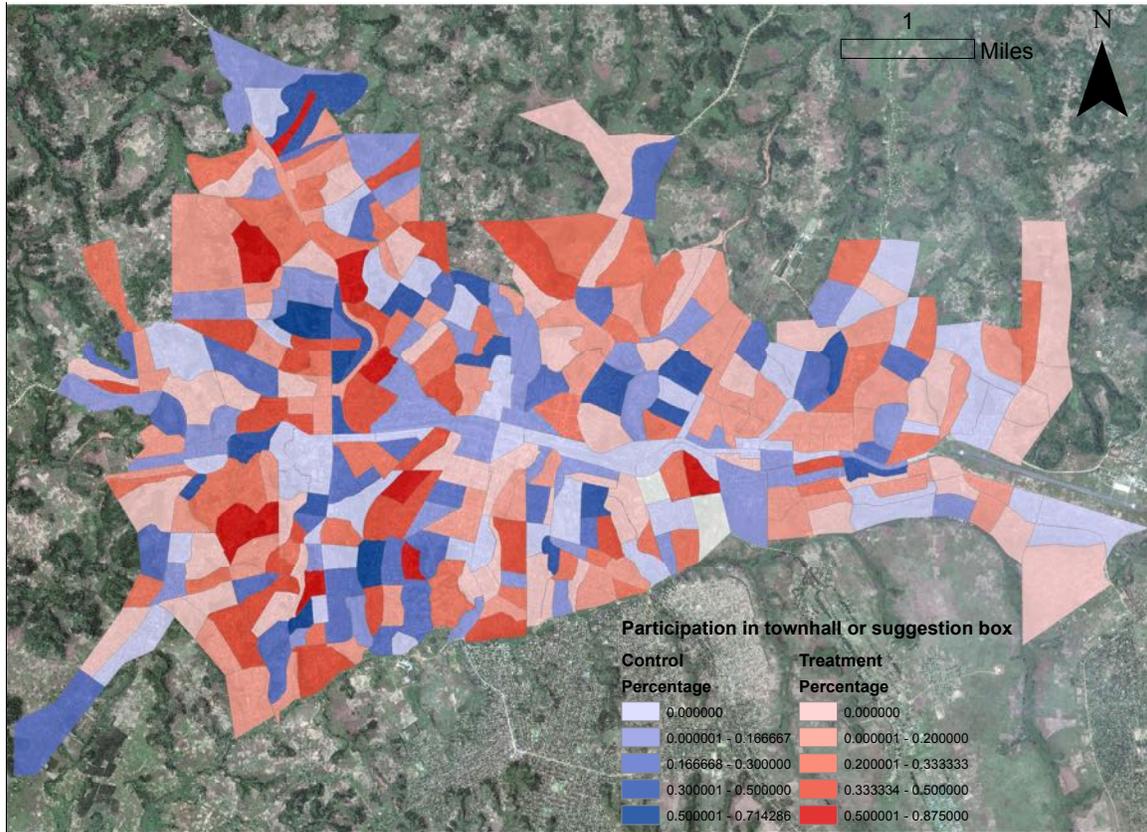


Figure 19: Neighborhood-level participation rates (in either the townhall meeting or evaluation box submission) across Kananga.

This section considers several more formal tests of a collective-action mechanism: (1) examining if treated townhall participants are more likely to show up to the meetings with other members of the neighborhood compared to control participants; (2) examining if individuals who participate in the townhall or the evaluation card exercise are more clustered geographically within treatment polygons relative to control polygons; (3) examining if the program had larger effects in areas with higher collective action potential; and (4) examining if the program appears to have stimulated the diffusion of rumors about the campaign, and whether neighborhoods with higher rates of rumor transmission exhibit larger treatment effects. Ultimately, although there is some suggestive evidence that the tax campaign could have stimulated coordination among citizens, it appears unlikely that a collective-action mechanism is driving the reduced-form effect on costly participation.

The first test is whether individuals in treatment polygons appear more likely to travel together to

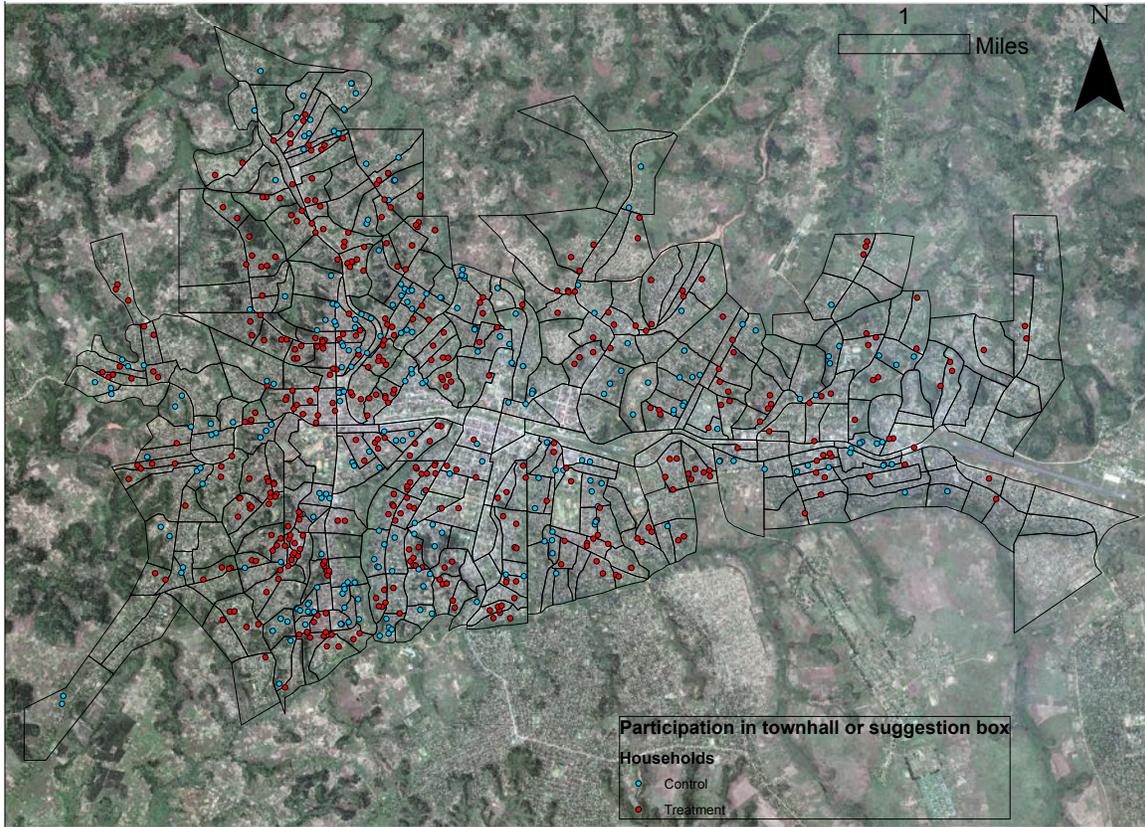


Figure 20: Locations of treatment and control individuals’ households who either attended a townhall meeting or submitted a evaluation card across Kananga.

townhall meetings. If lower barriers to coordination explains the treatment effect, then one might expect individuals to share a motorbike taxi or walk together to the townhall meeting venue. Then would then arrive together and appear consecutively in data from the participant registration process.¹¹ Table 7 shows suggestive evidence that treated townhall participants are about 6 percentage points more likely to show up with other members of their neighborhood relative to control townhall participants. Column 2 includes a (“bad”) control for the total attendance rate in a polygon to explore the possibility that the effect of the program on joint arrival is mechanically explained by the higher numbers of individuals attending meetings in treatment polygons. Although the total polygon attendance rate is also an outcome, and therefore technically a “bad control” (Angrist and Pischke, 2008), it is nonetheless suggestive that adding this regressor on the right-hand side does not change the estimated effect of the program. Column 3 then controls for the average population density of the polygon to make sure the effect is not driven by imbalance in how thickly settled neighborhoods are across treatment and control.¹² Although the estimate is only marginally significant in Column 2, the coefficient is stable, providing suggestive evidence that the tax program could have a catalytic effect on the degree of coordination among townhall participants.

The second test is whether treated participants’ households appear more clustered geographically

¹¹Enumerators completed a very short survey form to check participants’ identity using the code written on their paper invitation. This survey included a timestamp, so it is possible to see if participants arrived together to the townhall meeting.

¹²Population density is calculated by dividing the estimated number of households by the total area of the polygon.

Table 7: Arriving at townhall with member of neighborhood

	Arrived at townhall meeting with neighbor		
	(1)	(2)	(3)
Campaign	0.063 (0.039)	0.065* (0.038)	0.061 (0.038)
Polygon townhall attendance		0.291** (0.122)	0.263** (0.121)
Polygon population density			-0.072* (0.039)
Covariates	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes
R^2	0.109	0.122	0.131
Observations	480	480	479
Clusters	206	206	205
Control Mean	.067	.067	.067

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: the dependent variable is an indicator for townhall participants who arrived with another individual from the same polygon. *Polygon townhall attendance* is the average rate of townhall attendance in the polygon. *Polygon population density* is the estimated total number of houses divided by the area of the polygon. The sample includes all individuals who attended a townhall meeting.

within polygons compared to control participants. If individuals are making isolated, independent decisions about whether or not to engage in costly participation, then their households ought to be spread out throughout the polygon, as demonstrated by the first panel of Figure 21. However, if a collective-action mechanism explains the increase in participation caused by the tax campaign, then we might expect individuals in the vicinity to be more likely to attend as well, such as those that fall within the red circle in the second panel. The third panel indicates a spatial distribution of participator households that would lend credence to a collective action mechanism relative to the stylized distribution in the first panel representing a control neighborhood.

An observable implication of this hypothesized difference in spatial distribution of participators is that the average distance among the households of participators within polygons should be *smaller* in treatment relative to control, conditional on the total number of participators per polygon. To construct this measure, I first calculate the euclidean distance between each participant’s household within a polygon and then take the average of these distances.¹³ As shown in Table 8, although the point estimate on the program indicator is negative, it is not statistically distinguishable from zero. This observation remains true if we condition on the polygon participation level — the number of households participating may mechanically decrease the average distance outcome¹⁴ — and the average population density of the polygon. This exercise, therefore, does not provide support for a collective-action mechanism.

The third test is to examine whether neighborhoods more conducive to collective action exhibit a

¹³The analysis is thus on the polygon level, omitting polygons with fewer than two participants.

¹⁴This is, again, a “bad control” and included for completeness.

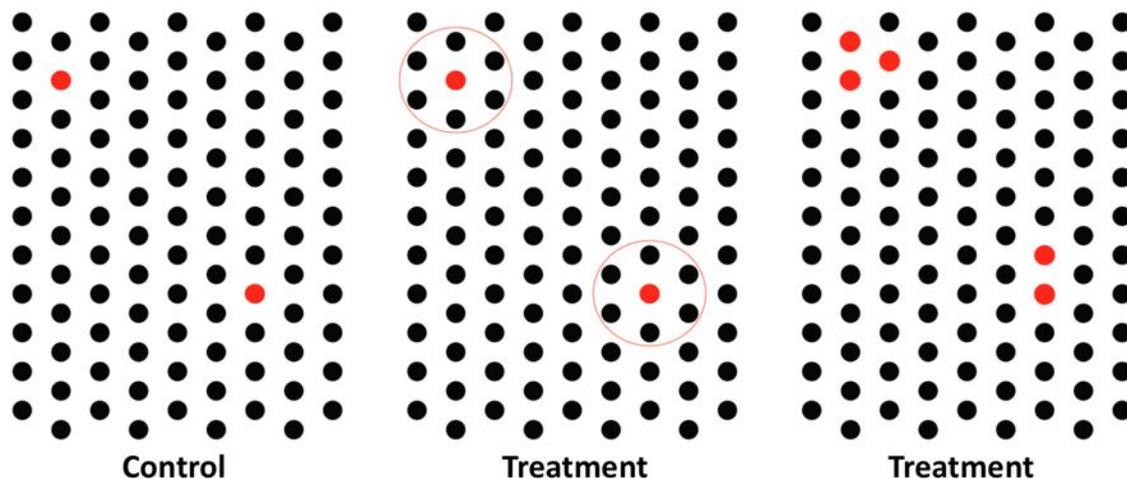


Figure 21: Stylized illustration of hypothetical participants in treatment and control.

larger treatment effect. That is, if a collective-action mechanism were chiefly behind the increase in participation, one might expect that the treatment effect would be larger in neighborhoods in which barriers to collective action were lower ex ante. I consider four proxies for the “collective action potential” of different neighborhoods in Kananga. The first, *Baseline protest*, is the average rate of participation in political protests observed at baseline. Because taking part in protests also necessitates overcoming the collective-action problem, the baseline rate of participation in protests can be thought of as a form of revealed collective action capacity of neighborhoods before the tax campaign. The second proxy, *Baseline ethnic homogeneity*, is the ethnic homogeneity of the neighborhood. Numerous studies have documented the challenges to collective action in settings of high ethnic heterogeneity (Easterly and Levine, 1997; Miguel and Gugerty, 2005; Larson and Lewis, 2017). I therefore estimate the ethnic homogeneity of neighborhoods using baseline data on self-reported ethnicity. Third, the population density of a neighborhood is another plausible correlate of collective-action potential. More densely populated networks are characterized by higher rates of information diffusion, which might facilitate coordination (Granovetter, 1973). Finally, a common way political parties solve collective-action problems in politics is the activity of local brokers who coordinate among individual voters. Individuals known as “avenue chiefs” and “quarter chiefs” play this role in Kananga, though they are not powerful as in some more consolidated African democracies with stronger parties. The observed activity of avenue chiefs at baseline, *Baseline chief activity*, therefore offers yet another proxy for the collective-action potential of neighborhoods.¹⁵

Table 9 explores heterogeneous treatment effects according to each of these measures. To facilitate interpretation, I use binary versions of each measure, where each variable indicates that a polygon is above the median in the sample. Confirming the intuition noted in the previous paragraph, each variable enters with a positive (though statistically insignificant) coefficient, indicating that these neighborhood characteristics may indeed facilitate participation on the margin. The regressions summarized in this table reveal that, in fact, the treatment effect is considerably *larger* in neighborhoods with below-median rates of baseline participation in protests, ethnic homogeneity, population density, and chief activity. In other words, precisely where collective action was

¹⁵Specifically, baseline survey participants responded whether one of these chiefs had ever collected formal or informal taxes from them in the past. This information is used to gauge how active chiefs were ex ante.

Table 8: Average euclidean distance among participators' households

	Average distance among participating households		
	(1)	(2)	(3)
Campaign	-1.667 (2.636)	-2.189 (2.575)	-2.262 (2.552)
Neighborhood participation level		20.313*** (7.462)	19.630*** (7.452)
Neighborhood population density			-2.068 (2.198)
Stratum FE	Yes	Yes	Yes
R^2	0.225	0.239	0.242
Observations	196	196	196
ControlMean	14	14	14

Robust standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: The dependent variable is the polygon-level average euclidean distance (measured in degrees) among the households of all individuals who either attended a townhall meeting or submitted an evaluation card. *Polygon townhall attendance* is the average rate of townhall attendance in the polygon. *Polygon population density* is the estimated total number of houses divided by the area of the polygon. The unit is the polygon. The sample includes all polygons with multiple individuals who either attended the townhall or submitted an evaluation card.

difficult ex ante, the program appears to have caused a larger boost in costly participation.

Figure 22 demonstrates this point graphically. It shows stratum-level participation rates for treatment and control neighborhoods, sorted by participation level in control.¹⁶ In strata where participation is already high, there is less evidence of a consistent treatment effect. The average effect noted in the main results section derives chiefly from parts of the city with low levels of participation absent the program.

The most natural interpretation of these findings is that the collective-action mechanism is unlikely to be driving the reduced-form effect of the tax campaign on participation. Rather, this pattern of heterogeneous effects is consistent with the evaluation, noted above, that the treatment has larger effects on individuals with less prior exposure to the formal state.¹⁷ For these individuals, the informational signal sent by the tax collection program is stronger than it is for individuals who are habituated to interacting with the provincial government directly. Individuals with less past exposure to the state should thus update more about the capacity of the government because of the tax program, making it more likely that they will be tipped past the participation threshold and choose to attend the townhall meeting or submit an evaluation card. In other words, this evidence supports the signaling hypothesis noted in the previous section.

That said, an alternative interpretation of Table 9 is that the tax campaign has an average effect on participation precisely because it catalyzes coordination in neighborhoods that have a deficit of collective action ex ante. The effect is more muted where collective action is already high because

¹⁶As noted, strata are defined based on location in the city and total population size.

¹⁷In particular, these results correspond with the heterogeneous effects by house quality (a dichotomous proxy for wealth) noted previously: the program has a larger effect on relatively poorer parts of the population.

Table 9: Heterogeneity by baseline polygon-level collection action

	Participation in townhall or suggestion card			
	(1)	(2)	(3)	(4)
Program	0.068** (0.031)	0.056*** (0.020)	0.056*** (0.022)	0.058** (0.023)
Prog X High party membership	-0.028 (0.036)			
High party membership	0.015 (0.025)			
Prog X High ethnic homogeneity		-0.013 (0.035)		
High ethnic homogeneity		0.042* (0.024)		
Prog X High population density			-0.013 (0.033)	
High population density			0.029 (0.025)	
Prog X High chief activity				-0.021 (0.033)
High chief activity				0.024 (0.025)
Covariates	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes
R^2	0.067	0.068	0.067	0.067
Observations	2913	2913	2913	2913
Clusters	356	356	356	356
Control Mean	.18	.18	.18	.18
F -test p -value	.14	.16	.17	.13

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes:

the additional boost to coordination is unnecessary: people are already participating. In this reading, then, the campaign fills a collective action deficit in certain areas.

A fourth test of the collective-action mechanism investigates rumors about the tax campaign. The clearest way in which tax collection could lower the barriers to collective action is by stimulating communication about the provincial government in local neighborhoods. If this were the key mechanism, one might expect a positive treatment effect on the circulation of rumors about the tax program on average, and a more pronounced effect on participation in neighborhoods with higher rates of rumor transmission.

I explore these possibilities using data gathered during the monitoring survey.¹⁸ Individuals were

¹⁸As a reminder, this survey was administered concurrently with the tax collection campaign. In treatment neighborhoods, enumerators visited households for the monitoring survey 2-5 weeks after tax collectors finished working there. In control neighborhoods, enumerators visited 2-5 weeks after tax collectors finished work in an adjacent or nearby neighborhood.

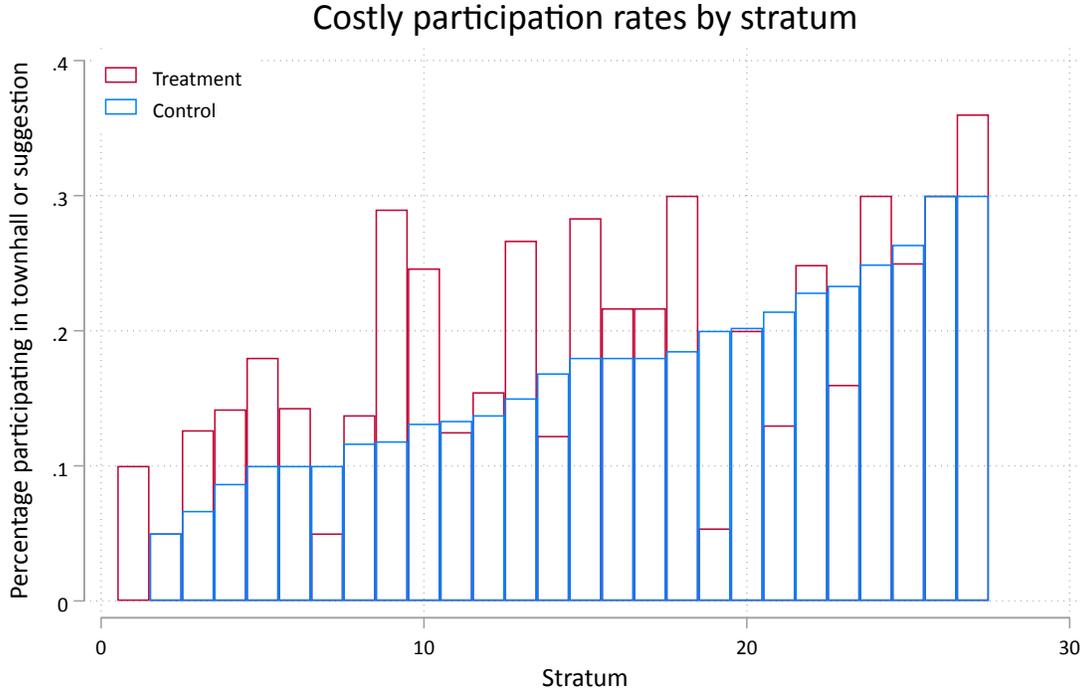


Figure 22: Costly participation within strata compared across treatment and control.

asked if they had heard of the property tax campaign from neighbors, the radio, etc, *before* the start of the survey and before the arrival of tax collectors (if they had reported a visit from collectors).¹⁹ The question therefore gauges the extent of uncontrolled information flow about the tax campaign throughout the city: the spread of rumors about the campaign not directly associated with randomly assigned tax collector visits or the evaluation surveys administered by the research team. Nearly 30% of individuals in both treatment and control neighborhoods answered the question positively, indicating pre-treatment knowledge of the tax campaign. The most common ways in which individuals learned about the campaign were (1) the informational flier distributed in all neighborhoods before the campaign (discussed previously), (2) other people in the compound, such as family members or renters, and (3) neighbors (see Figure 23).

Were individuals in treatment neighborhoods more likely to hear rumors about the tax campaign? I consider two dependent variables. First, *Heard rumor of campaign* is an indicator for respondents with prior information about the tax campaign from *any* source. Second, *Heard neighborhood rumor* is an indicator for respondents who obtained prior information about the campaign from other people in their local neighborhood: members of their compound, neighbors or other individuals in the locality or quartier, or the local neighborhood chief. About 43.5% of individuals who had some prior knowledge of the tax campaign heard such neighborhood rumors. Table 10 provides suggestive evidence that rumors about the campaign were somewhat more widespread in treatment neighborhoods compared to control neighborhoods, though the point estimate is only marginally significant when considering the second dependent variable. It might seem surprising that the treatment is not strongly associated with greater communication about the tax campaign.

¹⁹I added the questions about rumors midway through monitoring survey enumeration, so these data exist only for 47.7% of the full monitoring sample.

Table 10: Effects of the campaign on rumors

	Heard rumor of campaign (1)	Heard neighborhood rumor (2)
Program	0.043 (0.036)	0.048* (0.028)
Stratum FE	Yes	Yes
R^2	0.125	0.095
Observations	36283	37067
Clusters	249	249
Control Mean	.29	.12

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: *Heard rumor of campaign* is an indicator for respondents who received information about the tax campaign before the monitoring survey and before tax collectors arrived at the household. *Heard neighborhood rumor* is a more restrictive version of the previous indicator variable that captures only local information diffusion about the tax campaign. Specifically, it equals 1 only for individuals who reported hearing of the tax campaign from (1) members of the compound, (2) neighbors, (3) people in the locality, (4) people in the quarter, or (5) the city chief. Data are from the monitoring survey, hence the larger sample size.

However, recall that the pre-treatment information intervention (administered before this survey question) was distributed in *all* polygons — treatment and control — precisely to regularize and hold constant the spread of information about the tax campaign. Thus, the lack of a strong increase in rumors about the campaign is perhaps to be expected, especially since the informational fliers were the most common source of pre-treatment information about the tax campaign.

A more direct test of whether a collective-action mechanism underlies the reduced-form increase in participation due to the tax program is to examine whether neighborhoods characterized by higher diffusion of rumors about the campaign exhibit a larger treatment effect. Such an analysis is not identified, given that it essentially examines heterogeneous treatment effects by another outcome of the program (rumors). Nonetheless it can be suggestive if we assume that the treatment effect would be larger in neighborhoods with higher levels of rumor circulation.

I therefore calculate the polygon-level rate of rumor transmission during the monitoring survey, and construct an indicator variable, *High rumor rate*, if a polygon is above the median rate of rumor transmission. I also consider only rumors that spread through local channels, following the same coding rules as noted above for the *Heard neighborhood rumor* variable. Polygons with above-median rates of neighborhood-specific rumor transmission are indicated by the variable *High neighborhood rumor rate*. If higher levels of communication about the tax campaign explain the main treatment effect observed in the previous sections, then one would expect the program to have a more pronounced effect in neighborhoods with higher rumor diffusion.

However, as noted in Table [11](#), there is no evidence of heterogeneous treatment effects by rumor rates. Although the point estimate on the interaction term is positive, it is not statistically different from zero. Moreover, the magnitude of the average effect of the program on participation is unchanged, though the standard errors are larger because the sample is nearly halved for this analysis.^{[20](#)}

²⁰As noted above, the reduction of sample size reflects the fact that the rumor questions were only administered

Table 11: Heterogeneity based on spread of rumors

	Townhall or suggestion	
	(1)	(2)
Program	0.046 (0.029)	0.046 (0.030)
Prog X High rumor rate	0.024 (0.040)	
High rumor rate	-0.025 (0.034)	
Prog X High neighborhood rumor rate		0.020 (0.039)
High neighborhood rumor rate		-0.032 (0.034)
Covariates	Yes	Yes
Stratum FE	Yes	Yes
R^2	0.077	0.078
Observations	1719	1719
Clusters	208	208
Control Mean	.18	.18

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: the dependent variable is an indicator for participants who attended a townhall meeting or submitted an evaluation card. *High rumor rate* is an indicator for polygons above the median rate of rumor transmission during the monitoring survey. *High neighborhood rumor rate* is an indicator for polygons above the median rate of neighborhood-specific rumor transmission, i.e. rumors spread among family members, neighbors, members of the locality or quartier, or by the local city chief. The sample is smaller because rumor data exist only for 208 of 356 total polygons due to the addition of this module midway through survey enumeration.

In interpreting this null result, it is important to note that this survey question measuring rumors about the tax campaign does not necessarily capture information flow concerning engagement with the government, specifically attendance of a townhall meeting or submission of evaluation cards. However, it is a reasonable proxy: where individuals were better informed by the local “radio trottoir” (rumor mill) about the tax campaign, they are likely to also be in better contact about these avenues of political participation.

In conclusion, there is some suggestive evidence that the tax campaign could be a catalyst of collective action. Townhall meeting participants are slightly more likely to arrive with other members of their neighborhood (Table 7). The tax campaign also appears to have stimulated the spread of local tax-related rumors (Table 10), though the program does not have a more pronounced effect on participation in neighborhoods with higher rumor diffusion. However, both sources of evidence are only marginally statistically significant. The rest of the evidence considered does not provide support a collective-action mechanism. In sum, then, although a collective-action mechanism may explain part of the reduced-form increase in participation caused by the tax program, it is unlikely that it is the principal mechanism. There is stronger evidence in support

midway through the monitoring survey. So I do not have these data for every polygon. This test concerns only 208 of the 356 polygons in the main analysis.

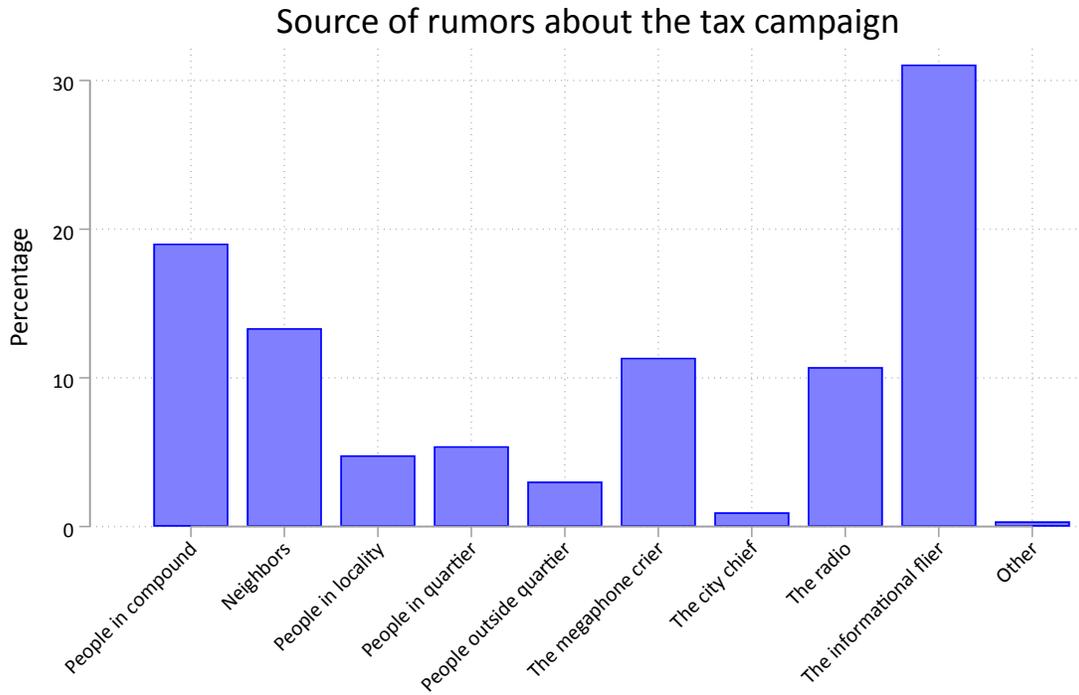


Figure 23: Where did you hear about the tax campaign for the first time?
of a signaling mechanism.

4 Robustness checks

This section reports results from OLS estimations of Equation [1](#) in the paper for all of the dependent variables considered in the paper. Robustness checks include the following specifications (with and without house quality interactions):

1. **Only the three basic covariates** (gender, age, age squared). These covariates are indicated as *Covs basic* in the robustness tables.
2. **All covariates listed in the pre-analysis plan.** This includes the four covariates (business owner status, estimated wealth, polygon-level availability of public lighting, polygon-level past visits from collectors) found to have slight imbalance, as discussed in paper Section [4.3](#). These covariates are indicated as *Covs imbalance* in the robustness tables. Finally, the other 22 covariates discussed in the paper are also included, indicated as *Covs additional*.
3. **Enumerator fixed effects.** Because the enumerator’s comportment could influence how participants understand and interpret survey questions, the third column of each table adds fixed effects for the 15 enumerators who worked on the endline survey.
4. **Sampling weights** (as discussed in the previous section). Estimates in the fourth column of the following tables can be considered representative of all property owners in Kananga.
5. **Interactions with house quality.** To shed light on the mechanisms linking taxation and participation, the last specification investigates heterogeneity by wealth, as pre-registered in the analysis plan. In particular, the signal about the government sent by the tax program may be stronger among individuals with less prior contact with the government. Baseline data reveal that less wealthy individuals are a clearly defined subgroup with less past exposure to the state.^{[21](#)} Exploring heterogeneity by this dimension therefore sheds light onto the applicability of this mechanism in the present context. For simplicity, I use a binary measure of wealth (*House quality*) that equals 0 if a house is constructed with mud bricks (56% of the sample) and 1 if a house is constructed with fired bricks, cement, or any other modern material (44% of the sample). The fifth column always contains the p -value from an F test of the hypothesis that both the coefficient on *Program* and *ProgramXHouse* are equal to zero.

The variable name used in the paper is shown in the title of each table. In addition to variable-specific robustness tables, other tables and figures that also function as robustness checks are interspersed in the follow sections according to the topics under consideration. Specifically, for each index considered in the paper, the corresponding subsection contains a coefficient plot summarizing regressions (in the basic specification) using each individual constituent survey question as the dependent variable.

²¹Specifically, individuals who are below median in a household wealth index (constructed using the observed quality of the roof, toilets, floor, access to electricity, and ownership of a vehicle) are 4.5 percentage points less likely to report ever seeing government agents in their neighborhood. They are 3.4 percentage points less likely to know the full name of the provincial governor, and 10 percentage points less likely to know the name of the provincial tax ministry. These magnitudes increase considerably among even less wealthy segments of the population (e.g. the bottom quartile of the wealth distribution).

Table 12: Results section robustness checks

<i>Dependent variable</i>	Basic covariates	All covariates	Enumerator FE	Sampling weights	Low house quality
<i>Panel I: Compliance</i>					
Paid property tax	0.110 0.010	0.107 0.010	0.109 0.010	0.107 0.010	0.092 0.012
<i>Panel II: Participation</i>					
Townhall meeting attendance	0.042 0.020	0.035 0.021	0.053 0.019	0.039 0.020	0.054 0.024
Suggestion card submission	0.022 0.012	0.021 0.012	0.025 0.012	0.028 0.013	0.032 0.015
Townhall or evaluation	0.049 0.016	0.047 0.017	0.052 0.016	0.045 0.017	0.057 0.021
Townhall and evaluation	0.028 0.009	0.025 0.010	0.032 0.009	0.030 0.010	0.038 0.012
Costly participation index	0.144 0.042	0.136 0.044	0.157 0.042	0.141 0.044	0.178 0.053
<i>Panel III: Government Responsibility</i>					
Resp. prov. govt (full index)	0.098 0.051	0.114 0.052	0.032 0.041	0.111 0.051	0.098 0.063
Resp. prov. govt (sector-based)	0.071 0.053	0.093 0.054	0.011 0.041	0.073 0.053	0.063 0.066
Resp. prov. govt (hypotheticals)	0.090 0.040	0.079 0.041	0.073 0.040	0.127 0.042	0.113 0.057

Each cell summarizes an estimation of Equation [1](#). The top number is the estimated coefficient on the treatment indicator. The bottom number is the cluster-robust standard error. Each column corresponds to one of the robustness checks described on p. [45](#). In the fifth column the coefficient is the treatment effect on households of below-median house quality.

Table 13: Mechanism section robustness checks

<i>Dependent variable</i>	Basic covariates	All covariates	Enumerator FE	Sampling weights	Low house quality
<i>Panel I: Extractive Capacity - Coercive Compliance</i>					
Information about citizens	0.132 0.045	0.155 0.043	0.098 0.039	0.135 0.046	0.110 0.059
Ability to punish evaders	0.038 0.049	0.023 0.047	0.031 0.038	0.039 0.049	0.038 0.063
<i>Panel II: Extractive Capacity - Voluntary Compliance</i>					
Performance of tax ministry	0.148 0.049	0.128 0.049	0.075 0.042	0.136 0.048	0.102 0.062
Taxes not pocketed	0.206 0.045	0.198 0.044	0.165 0.040	0.188 0.046	0.172 0.057
Neighbors paid taxes	0.323 0.054	0.335 0.052	0.363 0.049	0.359 0.054	0.258 0.063
<i>Panel III: Productive Capacity</i>					
Ability to provide public goods	0.002 0.054	0.019 0.054	-0.033 0.041	-0.004 0.055	0.001 0.070
Performance of government	0.066 0.051	0.052 0.049	0.005 0.040	0.063 0.052	-0.020 0.066
Tax well spent	0.128 0.050	0.112 0.048	0.074 0.043	0.140 0.050	0.205 0.063

Each cell summarizes an estimation of Equation [1](#). The top number is the estimated coefficient on the treatment indicator. The bottom number is the cluster-robust standard error. Each column corresponds to one of the robustness checks described on p. [45](#). In the fifth column the coefficient is the treatment effect on households of below-median house quality.

Table 14: Costly participation controlling for distance to respondents' households)

	Townhall attendance		Evaluation card submission		Costly participation index		Townhall or evaluation		Townhall and evaluation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Campaign	0.044**	0.054**	0.025**	0.032**	0.144***	0.180***	0.049***	0.058***	0.028***	0.038***
	(0.020)	(0.024)	(0.012)	(0.015)	(0.043)	(0.053)	(0.016)	(0.021)	(0.010)	(0.012)
Distance	-0.008	-0.008	-0.014*	-0.014*	-0.016	-0.017	-0.016	-0.017	0.008	0.008
	(0.014)	(0.014)	(0.008)	(0.008)	(0.028)	(0.028)	(0.011)	(0.011)	(0.006)	(0.006)
Campaign X House		-0.024		-0.016		-0.077		-0.019		-0.021
		(0.036)		(0.023)		(0.074)		(0.029)		(0.016)
House quality		0.010		0.008		0.071		0.019		0.019
		(0.031)		(0.020)		(0.060)		(0.024)		(0.013)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.062	0.062	0.056	0.056	0.070	0.070	0.068	0.068	0.039	0.040
Observations	1925	1923	2903	2901	2904	2902	2904	2902	2904	2902
Clusters	251	251	355	355	355	355	355	355	355	355
Control Mean	0.185	0.185	0.101	0.101	-0.057	-0.057	0.178	0.178	0.035	0.035
F -test (p)		0.064		0.079		0.002		0.009		0.005

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. p-value of interaction F test shown.

Distance is the average Euclidean distance from respondents' households to the Provincial Assembly building and to the evaluation card drop box. As shown in Figure 2 in the paper, these locations are fairly close together in the downtown part of Kananga. Thus the average distance is a meaningful control variable. Results are nearly identical if we consider each outcome individually, controlling for distance to the corresponding location (i.e. controlling for distance to the Provincial Assembly building for townhall attendance). I also show the interactions with house quality.

Table 15: *Costly participation index - AES coefficients*

	(1)	(2)	(3)	(4)
AES (Campaign)	0.099*** (0.037)	0.092** (0.037)	0.093*** (0.036)	0.113*** (0.035)
Covs basic	Yes	Yes	Yes	Yes
Covs imbalance	No	Yes	Yes	Yes
Covs additional	No	Yes	No	No
Stratum FE	Yes	Yes	Yes	Yes
Enum FE	No	No	Yes	No
Observations	2913	2913	2814	2913
Clusters	356	345	356	356

AES estimates using participation in townhall meetings and submission of evaluation cards as the outcomes. Column 1 shows the basic specification shown throughout the paper. Column 2 shows robustness check 1 (only the three basic covariates). Column 3 shows robustness check 2 (the full set of possible covariates). Column 4 shows robustness 3 (enumerator fixed effects).

Table 16: Submission of critical and commented evaluation cards

	Critical suggestion card (1)	Written-in suggestion (2)
Program	0.022** (0.010)	0.020** (0.008)
Covariates	Yes	Yes
Stratum FE	Yes	Yes
R^2	0.048	0.037
Observations	2913	2913
Clusters	356	356
Control Mean	0.078	0.033

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: *Critical evaluation* is an indicator variable for individuals who submitted an evaluation card that was critical of the government (determined by the respondent's choice to check the box "I want the Provincial Government of Kasai Central to do a better job" on the card). *Written-in suggestion* is an indicator for respondents who dropped off cards with critical written-in suggestions for the government in addition to the five multiple-choice questions filled out by everyone (see Figure 14).

Table 17: Extractive and productive capacity (no taxpayers)

<i>Dependent variable</i>	β	SE	R^2	N	μ_c
<i>Panel I: Extractive Capacity - Coercive Compliance</i>					
Information about citizens	0.132***	0.045	0.081	2705	-0.080
Ability to punish evaders	0.021	0.049	0.042	2679	-0.017
<i>Panel II: Extractive Capacity - Voluntary Compliance</i>					
Performance of tax ministry	0.093*	0.048	0.065	2636	-0.076
Confidence in tax collectors	0.063	0.047	0.027	2596	-0.059
Taxes deposited to government	0.147***	0.045	0.041	2580	-0.119
Percent of neighbors who paid	0.257***	0.048	0.089	1816	-0.179
<i>Panel III: Productive Capacity</i>					
Ability to provide public goods	-0.019	0.054	0.039	2322	0.009
Performance of government	0.036	0.050	0.045	2640	-0.030
Tax revenues spent well	0.111**	0.050	0.054	2612	-0.062

Notes: this table summarizes OLS estimations of Equation 1, with the sample restricted to non-taxpayers. β is the coefficient on the treatment indicator, followed by the cluster-robust standard error, r-squared, number of observations, and control group mean. There are 356 clusters. The number of observations varies across regressions due to non-response for specific survey questions.

Table 18: Effects of the campaign on extractive and productive capacity and correlations of beliefs with participation and payment

<i>Dependent variable</i>	<i>Full sample</i>	<i>Treatment group only</i>	
	Treatment Effect (1)	Participators vs not (2)	Payers vs not (3)
<i>Panel I: Extractive Capacity - Coercive Compliance</i>			
Information about citizens	0.152*** (0.044)	-0.098 (0.096)	0.179** (0.072)
Ability to punish evaders	0.048 (0.048)	0.206** (0.100)	0.200*** (0.075)
<i>Panel II: Extractive Capacity - Voluntary Compliance</i>			
Performance of tax ministry	0.122*** (0.047)	-0.031 (0.108)	0.338*** (0.070)
Taxes not pocketed	0.188*** (0.044)	-0.262** (0.121)	0.469*** (0.083)
Neighbors paid taxes	0.348*** (0.052)	-0.129 (0.116)	0.713*** (0.118)
<i>Panel III: Productive Capacity</i>			
Ability to provide public goods	-0.012 (0.053)	-0.040 (0.099)	0.078 (0.104)
Performance of government	0.045 (0.049)	-0.056 (0.119)	0.064 (0.082)
Taxes well spent	0.108** (0.050)	-0.173** (0.084)	-0.002 (0.091)

Each cell summarizes a separate OLS regression. The first column shows the treatment effect from estimating Equation 1 with the dependent variable indicated. The second column shows the correlation between participation (measured as attendance at a townhall meeting and submission of a evaluation card) and the dependent variable in the treatment group. The third column shows the correlation between payment and the dependent variable in the treatment group.

4.1 Coefficient plots for sub-variables of indices

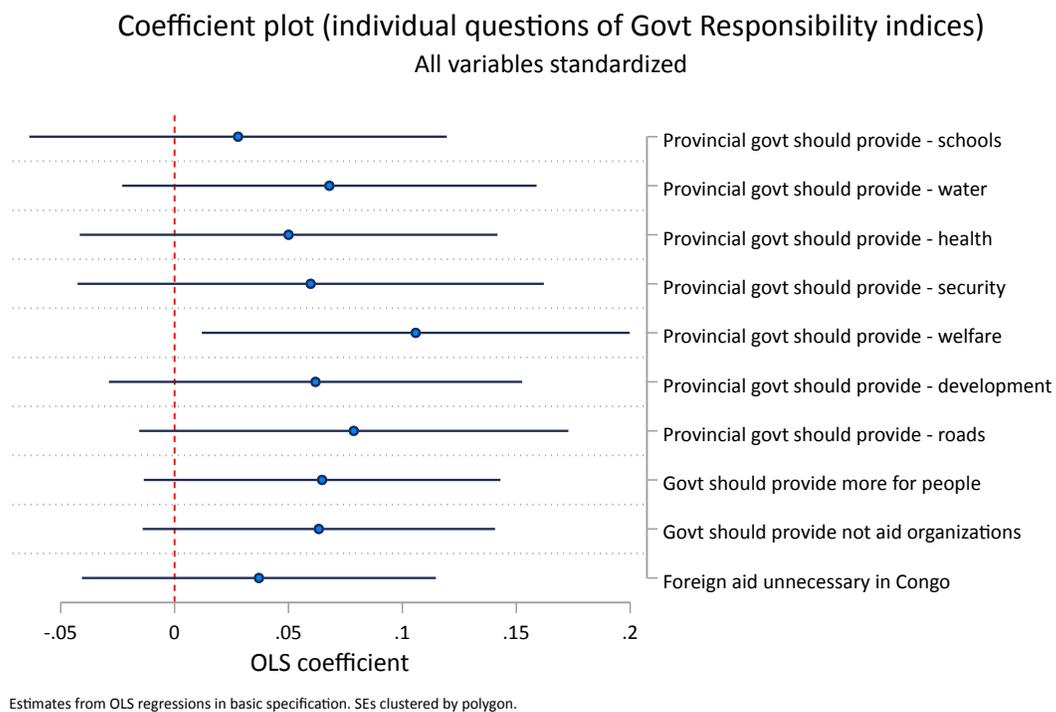
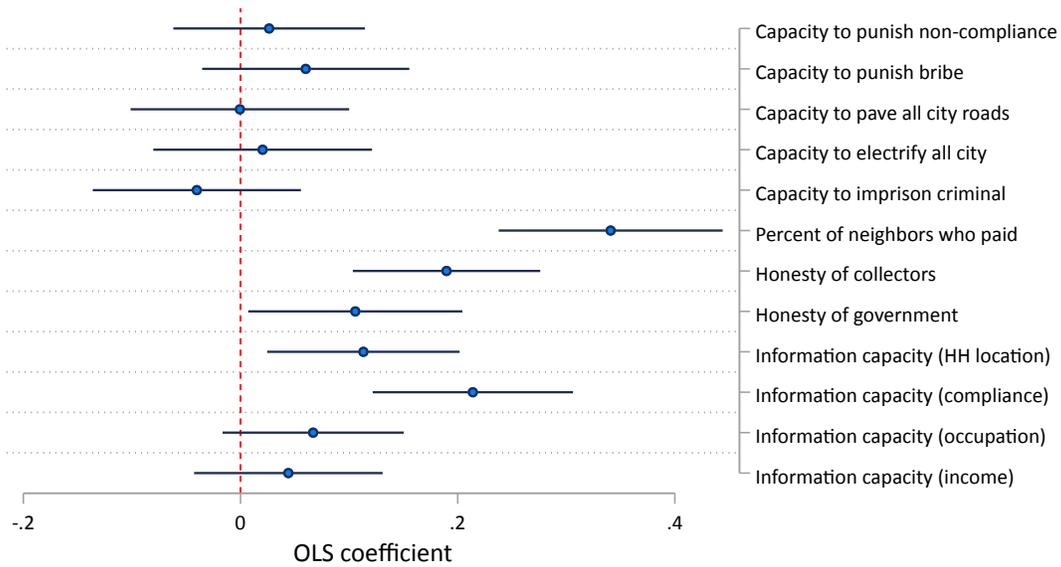


Figure 24: Coefficient plot for individual survey questions about the responsibility of the provincial government in the provision of public goods (sector and viewpoint questions).

Coefficient plot (individual questions of capacity indices)

All variables standardized

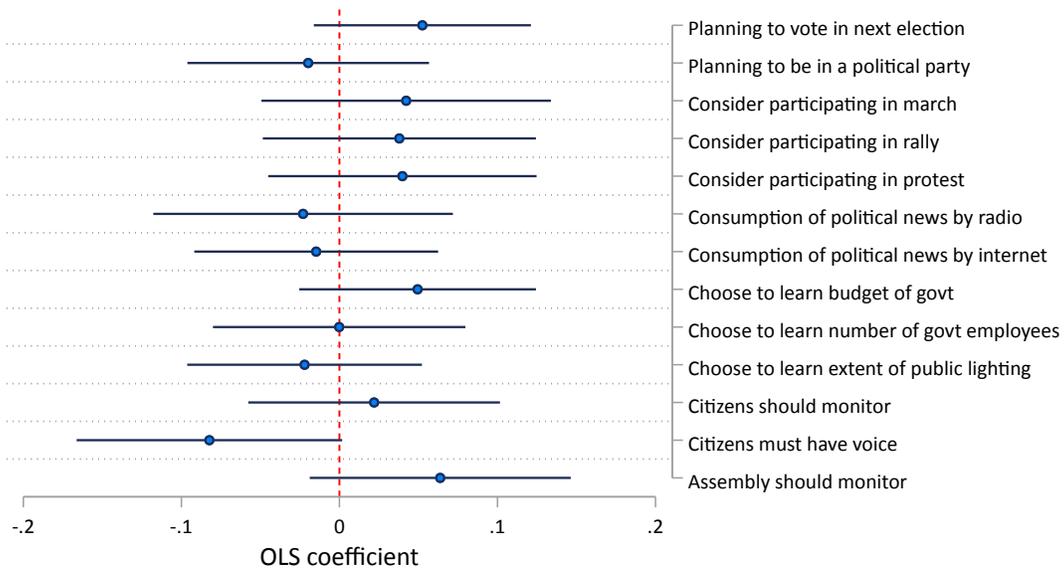


Estimates from OLS regressions in basic specification. SEs clustered by polygon.

Figure 25: Coefficient plot for individual survey questions concerning the quality of the provincial government.

Coefficient plot (individual questions of civic-mindedness indices)

All variables standardized



Estimates from OLS regressions in basic specification. SEs clustered by polygon.

Figure 26: Coefficient plot for individual survey questions about expected future national political participation and interest in politics in general.

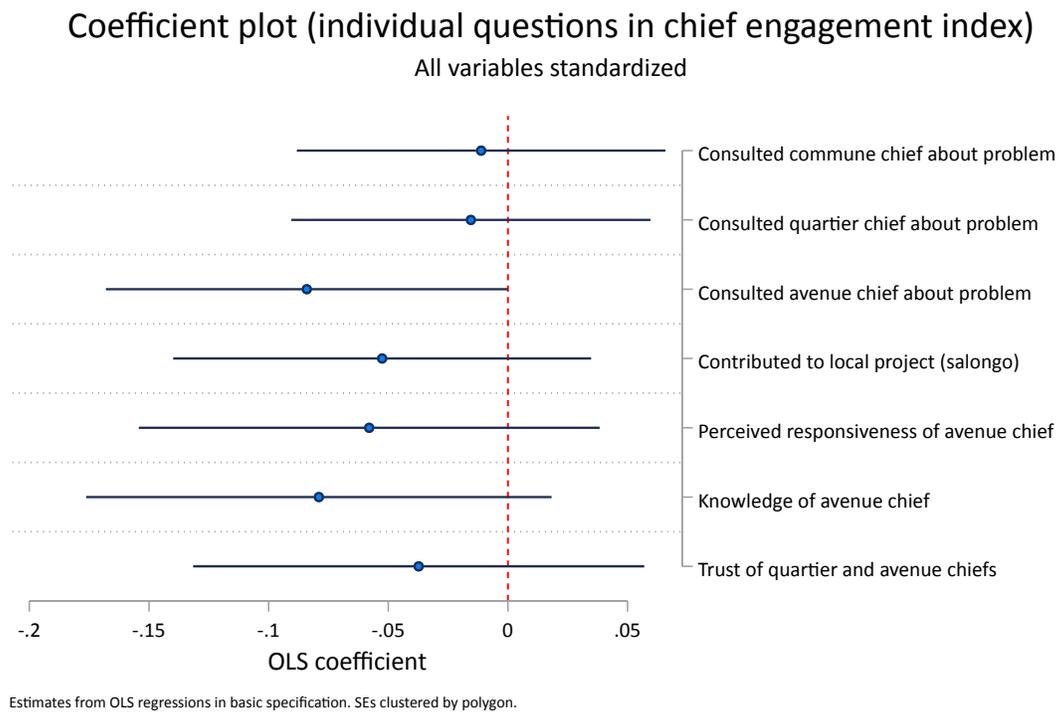


Figure 27: Coefficient plot for individual survey questions concerning engagement with city chiefs.

5 Additional tables and figures referenced in paper

Table 19: Effects of the campaign on trust in and familiarity with the research team

	Trusts researchers (1)	Knows researchers (2)	Past Participant (3)	No phone (4)	Fake phone (5)
Campaign	0.059 (0.051)	-0.028 (0.048)	0.020 (0.037)	0.017 (0.020)	-0.014 (0.016)
Covariates	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes
R^2	0.037	0.122	0.016	0.124	0.037
Observations	2733	2913	2913	2913	2913
Clusters	356	356	356	356	356
Control Mean	-0.011	0.034	-0.014	0.183	0.077

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: *Trusts researchers* is a standardized measure of respondents' self-reported trust levels in foreign research organizations. *Remembers researchers* is a standardized measure of respondents' ability to identify the employer of the enumerator in the endline survey. *Participated in past* is a standardized measure of respondents' self-reported participation in past research activities conducted by our team in Kananga. *No phone* indicates that the respondent did not provide a phone number in the endline survey. *Fake phone* indicates that the respondent provided a bad or fake phone number.

Table 20: Within-individuals changes in beliefs about the government from baseline to endline

	Responsibility of provincial government (sector-based) (1)	Trust in provincial government (2)	Honesty of provincial government (3)
Campaign X Endline	0.674** (0.278)	0.183 (0.255)	-9.355 (38.888)
Endline	0.004 (0.211)	0.022 (0.206)	38.539 (31.458)
Individual FE	Yes	Yes	Yes
R^2	0.032	0.004	0.006
Observations	1237	1233	1229
Clusters	304	304	304
Control Mean	2.513	5.475	486.924

SEs clustered by individual. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: *Responsibility of provincial government (sector-based)* is increasing in the perception that the provincial government should be a primary provider of public goods in Kananga. *Trust in provincial government* is an index increasing in trust of the government and tax ministry. *Honesty of provincial government* is increasing in the extent to which individuals expect tax money to be spent well rather than being wasted or stolen. These outcomes are observed twice for the subsample of 630 individuals tracked from baseline to endline.

Table 21: Effects of the campaign on national and local participation

	Engagement with national politics (1)	Interest in national politics (2)	Engagement with local city chiefs (3)
Campaign	0.042 (0.043)	0.001 (0.040)	-0.096** (0.046)
Covariates	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes
R^2	0.067	0.169	0.089
Observations	2912	2825	2913
Clusters	356	356	356
Control Mean	-0.003	0.039	0.041

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes: *Engagement with national politics* is a standardized index increasing in future plans to participate in national politics. *Interest in national politics* is a standardized index increasing in revealed and self-reported interest in learning about the government and politics. *Engagement with local city chiefs* is a standardized index increasing in the revealed legitimacy of local city chiefs.

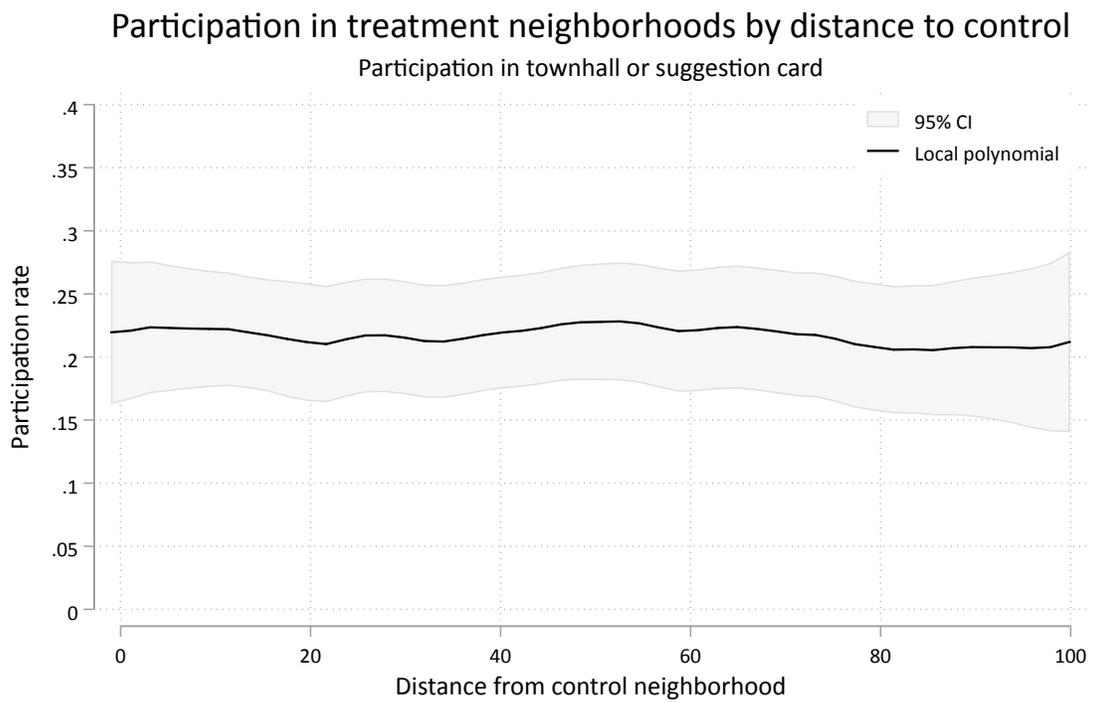


Figure 28: Participation in treatment neighborhoods by distance (in meters) to control.

Table 22: Variation in collector effort and efficacy

	Visited	Paid	Corr(Visited,Paid)	<i>p</i> -value
Collector1	0.619	0.095	0.148	0.113
Collector2	0.644	0.096	0.127	0.070
Collector3	0.755	0.106	0.089	0.279
Collector4	0.642	0.088	0.106	0.113
Collector5	0.699	0.098	0.108	0.031
Collector6	0.673	0.082	0.133	0.096
Collector7	0.614	0.114	0.173	0.002
Collector8	0.604	0.113	0.194	0.063
Collector9	0.643	0.107	0.081	0.365
Collector10	0.600	0.075	0.188	0.128
Collector11	0.659	0.081	0.097	0.029
Collector12	0.557	0.089	0.224	0.076
Collector13	0.556	0.037	-0.096	0.398
Collector14	0.705	0.137	0.109	0.231
Collector15	0.557	0.043	0.072	0.298
Collector16	0.695	0.049	0.017	0.675
Collector17	0.632	0.118	0.102	0.334
Collector18	0.581	0.076	0.050	0.152
Collector19	0.479	0.021	0.053	0.398
Collector20	0.745	0.143	0.099	0.212
Collector21	0.737	0.193	0.161	0.328
Collector22	0.632	0.144	0.115	0.042
Collector23	0.693	0.109	0.150	0.008
Collector24	0.608	0.054	0.075	0.414
Collector25	0.567	0.078	0.057	0.362
Collector26	0.713	0.186	0.108	0.083
Collector27	0.661	0.097	0.128	0.047
Collector28	0.622	0.153	0.249	0.014
Collector29	0.713	0.208	0.302	0.001
Collector30	0.756	0.244	0.211	0.227
Collector31	0.533	0.076	0.040	0.318
Collector32	0.652	0.163	0.206	0.044
Collector33	0.724	0.069	0.063	0.385
Collector34	0.553	0.053	0.103	0.347
Collector35	0.747	0.253	0.350	0.053
Collector36	0.660	0.170	0.198	0.090
Collector37	0.667	0.093	0.126	0.137
Collector38	0.794	0.235	0.623	0.046
Collector39	0.810	0.101	0.137	0.240

Table 23: Variation in collector effort and efficacy (cont.)

	Visited	Paid	Corr(Visited,Paid)	<i>p</i> -value
Collector40	0.870	0.087	0.101	0.372
Collector41	0.561	0.035	0.012	0.791
Collector42	0.677	0.000	0.000	.
Collector43	0.667	0.133	0.205	0.026
Collector44	0.609	0.159	0.039	0.649
Collector45	0.750	0.094	0.344	0.085
Collector46	0.763	0.153	0.169	0.151
Collector47	0.729	0.051	0.066	0.268
Collector48	0.525	0.225	0.368	0.003
Collector49	0.741	0.222	0.162	0.579
Collector50	0.809	0.147	0.159	0.059
Collector51	0.630	0.111	0.215	0.354
Collector52	0.723	0.191	0.242	0.060

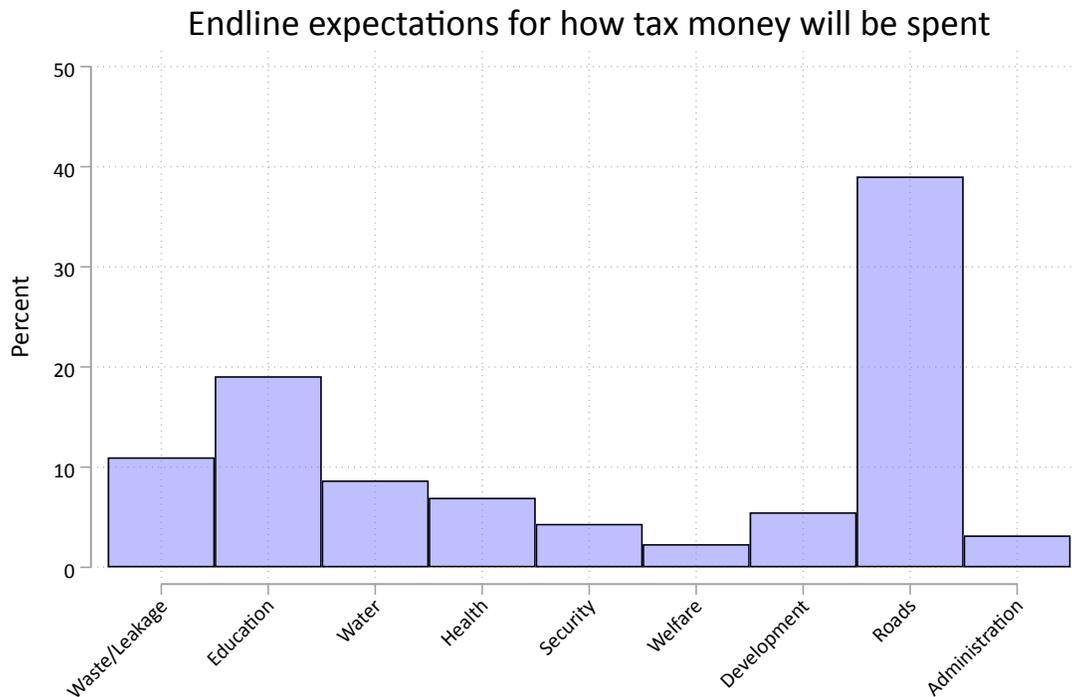


Figure 29: Endline beliefs about how the new revenues raised during the 2016 property tax campaign will be spent

Table 24: Perceived current level of public goods provision by the provincial government

	Schools	Water	Health	Security	Welfare	Develop.	Roads
Program	-0.022 (0.045)	0.024 (0.043)	-0.024 (0.043)	0.068 (0.044)	0.027 (0.041)	0.053 (0.041)	0.028 (0.040)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.025	0.034	0.050	0.038	0.034	0.031	0.055
Observations	2857	2892	2873	2878	2808	2821	2890
Clusters	356	356	356	356	356	356	356
ControlMean	0.004	-0.016	0.018	-0.032	-0.016	-0.034	-0.036

Standard errors clustered by polygon. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Notes: The dependent variables reflect respondents' views about the current level of public goods provision by the provincial government in each of the sectors listed as column titles. (*Develop.* is short for economic development. The exact wording of the survey question is: "Now let's talk about what services the provincial government currently provides to the citizens of Kananga. In your opinion, what level of public services does the provincial government of Kasai Central *currently* provide?" Enumerators then listed each of the sectors that appear in the table heading. Responses included 'a lot', 'some', and 'nothing'.

6 Exact text of survey questions

This section provides the exact text of survey questions used to construct all variables considered in the paper.

6.1 Variables used in Paper Section 5.

1. *Responsibility of the provincial government in public goods provision: sector-based*: standardized index composed of the sum of indicator variables for each time the respondent answered that the provincial government should be primarily responsible for the public good indicated.
 - ‘I am going to list some services/infrastructure many communities have. Tell me who you think should be primarily responsible for providing each one in our community. This does not need to be the current provider of these services/infrastructure.’
 - Sectors: schools, water system/wells, health care, keeping people safe, helping poor people, economic development, road maintenance.
 - Possible providers: national government, provincial government, NGOs, community organizations, religious groups/leaders, traditional leaders/chiefs, international organizations, everyone should take care of themselves.
2. *Responsibility of the provincial government in public goods provision: hypotheticals*: a standardized index composed of the following subquestions:
 - (a) ‘Now, I’m going to read you several statements of opposing viewpoints. Please tell me with which statement you most agree.’
 - (b) (1) ‘Some people say the provincial government should take more responsibility to ensure that everyone is provided for’ or ‘Other people say that people should take more responsibility to provide for themselves.’
 - (c) (2) ‘Foreign aid is necessary for Congo to become peaceful and prosperous.’ or ‘Foreign aid is not necessary in Congo; we have everything we need to achieve peace and prosperity.’
 - (d) (3) ‘Foreign aid organizations should provide more services in the health and education sectors in Congo.’ or ‘Foreign aid organizations should provide fewer services like health care and education; that is the responsibility of the provincial government.’
3. *Engagement with national politics*. Respondents reported their current and future participation in national elections, parties, marches, protests, and rallies. These five questions are combined into an index of expected future participation in national politics, using the same procedure described on page 18.
4. *Engagement with local city chiefs*. To measure local political engagement, I consider survey evidence on individuals reported interactions with and beliefs about city chiefs. Local city chiefs act as intermediaries — brokers — between citizens and the government. The *chef de commune*, *chef de quartier*, and the *chef d’avenue* are the bottom link in the chain of

the city government bureaucracy. Dating back to the Mobutu era, city chiefs tend to the following tasks: (1) organizing weekly *salongo*, an informal tax in which citizens contribute labor toward local public goods provision, such as cleaning and repairing roads²²; (2) communicating grievances to the government and advocating on behalf of the community; and (3) mediating local disputes to avoid escalation to the courts. Although they hold office for life and have elevated social status, city chiefs are appointed.

5. *Actual public goods provision*: “Now let’s talk about what services the provincial government currently provides to the citizens of Kananga. In your opinion, what level of public services does the Provincial Government of Kasai Central *currently* provide?”
6. *Trust in researchers*: ‘I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?’

6.2 Variables used in Paper Section 6.

1. *Information about citizens*: standardized index increasing in the perception that the government has information about citizens. The underlying survey questions are as follows.
 - (a) ‘Now I’d like to ask you how much information you think the provincial government keeps about its citizens. Do you think the provincial government knows the address of your house?’ [Yes - I am completely sure, Yes - I am somewhat sure, No - I am somewhat sure, No - I am completely sure]
 - (b) ‘Do you think the provincial government knows which of your neighbors did not pay the property tax in 2016?’
 - (c) ‘Do you think the provincial government knows what you do for a living?’
 - (d) ‘Do you think the provincial government knows how much money you make each month?’
2. *Ability to punish evaders*: standardized index increasing in the perceived capacity of the government to punish citizens who evade payment of the property tax. The underlying survey questions are as follows.
 - (a) ‘Now, imagine that next week a tax collector comes and visits one of your neighbors. Imagine he absolutely refuses to pay. In this case, what is the probability that the government will pursue and enforce sanctions? Choose one of the following options.’ [very likely, likely, unlikely, very unlikely]
 - (b) ‘Now imagine your neighbor pays a bribe instead of paying the tax. What is the probability that the government will pursue and enforce sanctions?’
3. *Performance of tax ministry*: standardized index increasing in citizens’ evaluation of and trust in the tax ministry. The underlying survey questions are as follows.

²²*Salongo* is an example of “informal taxation,” such as that discussed in [Olken and Singhal \(2011\)](#)

- (a) ‘I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? The tax ministry.’
 - (b) ‘Overall, how would you rate the performance of the tax ministry in Kananga?’
4. *Taxes not pocketed*: standardized index increasing in confidence that tax collectors will deposit money to the state account. The underlying survey questions are as follows.
- (a) ‘In general, think of what the tax collectors will do with the money they collect during this 2016 property tax campaign. Imagine the tax collectors collect \$1000 thanks to the campaign. How much of this money will they submit to the state account?’
 - (b) Note: the respondent then answers the question ‘How much of this money will they put in their pockets?’ If the results do not sum to \$1000, the respondent answers again. Only the response to the first question is used for this variable.
5. *Ability to provide public goods*: standardized index increasing in the perceived capacity of the provincial government to provide public goods. The underlying survey questions are as follows.
- (a) ‘To be successful with its projects, governments need both (1) the desire to do them, and (2) the capacity to execute them. Let’s discuss the capacity of the provincial government. Please tell me if you strongly agree, agree, disagree, strongly disagree or are neutral about the following statements. If the provincial government of Kasai Central wants to improve all of the roads in Kananga, it will do this quickly and without problems.’
 - (b) ‘If the provincial government of Kasai Central wants to provide electricity to everyone in Kananga, it will do this efficiently and without problems.’
 - (c) ‘If the provincial government of Kasai Central wants to find and imprison a criminal hiding somewhere in Kananga, it will do this efficiently and without problems.’
6. *Performance of provincial government*: standardized index increasing in citizens’ evaluation of and trust in the provincial government. The underlying survey questions are as follows.
- (a) ‘I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? The provincial government.’
 - (b) ‘Overall, how would you rate the performance of the provincial government in Kananga?’
7. *Taxes well spent*: standardized index increasing in citizens’ confidence that the money received by the provincial government will go to good uses and not be wasted or stolen. The underlying survey questions are as follows.
- (a) ‘Now I would like to ask you what you think the provincial government will do with the money it receives from this 2016 property tax campaign. Imagine that the provincial government of Kasai Central receives \$1000 thanks to this campaign. How much of this money will be put to good use, for example providing public goods?’
 - (b) Note: the respondent then answers the question ‘How much of this money will go to diversion of funds and waste?’ If the results do not sum to \$1000, the respondent

answers again. Only the response to the first question is used for this variable.

8. *Past visits (high)*: indicator variable for neighborhoods with above-median reported past visits from government tax collectors (measured during baseline survey). I aggregated individual responses for the neighborhood, and then computed this indicator based on all neighborhood-level rates. The baseline survey question was as follows.

(a) ‘Has a government tax collector ever come to your neighborhood?’ [Yes, No, DK]

9. *Past protest (high)*: indicator variable for neighborhoods with above-median reported past protest participation (measured during baseline survey). I aggregated individual responses for the neighborhood, and then computed this indicator based on all neighborhood-level rates. The baseline survey question was as follows.

(a) ‘Have you ever participated in a political protest of any kind?’ [Yes, No]

6.3 Additional variables considered in Online Appendix

1. *Current provision of public goods*: standardized index increasing in citizens’ perception of how much public goods provision the provincial government currently achieves in Kananga. The underlying survey questions are as follows.

(a) ‘Now let’s talk about what services the provincial government currently provides to the citizens of Kananga. In your opinion, what level of public services does the provincial government of Kasai Central currently provides? Please choose one of the following options for each area below.’ [The government provides a lot in this sector, The government provides a little in this sector, The government provides nothing in this sector]

(b) Sectors: Schools, Water system/wells, Health care, Keeping people safe, Helping poor people, Economic development, Road maintenance

7 Data anomalies and violations of the experimental design

This section reports on anomalies that occurred over the course of the experiment.

7.1 Dealing with missingness in house quality data

Due to a survey programming glitch, there is missing data on house quality for 78 observations (1.9%) in the endline data. Fortunately, we do observe several components of the ultimate measure of wealth that is used in the analysis (floor quality, possessions, electricity access), as well as several other strong predictors (weekly and monthly income, amount of money spent on transport in past 7 days, amount of money spent on airtime in past 7 days). It is therefore possible to impute wealth measures following the following steps.

1. Within a neighborhood of three adjacent polygons, fit an OLS model with wealth as the dependent variable and all relevant independent variables (mentioned above) using all complete data.

2. Extract the coefficients and multiply them with the observed characteristics of the households for which we are missing wealth data.
3. Substitute the predicted value of wealth in cases in which it is missing.

In the main analysis, the full sample is used, including these imputed values for the wealth variable. However, the results are robust to simply dropping these observations in estimations that use the wealth variable.

7.2 Violations of randomization of tax program

One tax collector conducted one day of the census in a control polygon (polygon 421) instead of a different treatment polygon in the same area. He also collected taxes from two households. This polygon was located in Nganza commune, which I had to drop for the endline survey due to the conflict in Kananga. As such, this mistake does not affect the analysis considered in the paper.

7.3 Violations of random assignment of tax collectors

Although I randomly assigned tax collectors to polygons in groups of three, at times no tax collectors were able to work on the program. In such cases, I non-randomly re-assigned available collector to these polygons. The current analysis does not exploit the random assignment of collectors except in the jackknife IV strategy. But fortunately this is not a central theme in the paper. These re-assignments will be of greater concern in future papers investigating how tax collector characteristics affect productivity and performance in the field. Below is a list of such cases:

1. Collector 1 re-assigned to polygon 111.
2. Collector 18 re-assigned to polygon 579, 212, 558.
3. Collector 31 re-assigned to polygons 368, 639.
4. Collector 7 re-assigned to polygon 419.
5. Collector 15 re-assigned to polygon 703.
6. Collector 37 re-assigned to polygon 676.
7. Collector 17 re-assigned to polygons 539, 675.
8. Collector 19 re-assigned to polygon 668.
9. Collector 22 re-assigned to polygon 671.
10. Collector 4 re-assigned to polygon 242.

References

Angrist, Joshua D and Jörn-Steffen Pischke, *Mostly harmless econometrics: An empiricist's companion*, Princeton university press, 2008.

- Banerjee, Abhijit, Sendhil Mullainathan, and Rema Hanna**, “Corruption,” 2012.
- Easterly, William and Ross Levine**, “Africa’s growth tragedy: policies and ethnic divisions,” *The Quarterly Journal of Economics*, 1997, 112 (4), 1203–1250.
- Granovetter, Mark S**, “The strength of weak ties,” *American journal of sociology*, 1973, 78 (6), 1360–1380.
- Khan, Adnan Q, Asim I Khwaja, and Benjamin A Olken**, “Tax farming redux: Experimental evidence on performance pay for tax collectors,” *The Quarterly Journal of Economics*, 2015, 131 (1), 219–271.
- Larson, Jennifer M and Janet I Lewis**, “Ethnic networks,” *American Journal of Political Science*, 2017, 61 (2), 350–364.
- Luttmer, Erzo F P and Monica Singhal**, “Tax Morale,” *Journal of Economic Perspectives*, 2014, 28 (4), 149–168.
- Miguel, Edward and Mary Kay Gugerty**, “Ethnic diversity, social sanctions, and public goods in Kenya,” *Journal of public Economics*, 2005, 89 (11-12), 2325–2368.
- Olken, Benjamin A and Monica Singhal**, “Informal taxation,” *American Economic Journal: Applied Economics*, 2011, 3 (4), 1–28.
- Paler, Laura**, “Keeping the public purse: An experiment in windfalls, taxes, and the incentives to restrain government,” *American Political Science Review*, 2013, 107 (4), 706–725.
- , **Wilson Prichard, Raul Sanchez de la Sierra, and Cyrus Samii**, “Survey on Total Tax Burden in the DRC,” in “DFID Final Report” 2016.
- Reid, Otis and Jonathan Weigel**, “Citizen Participation in Corruption: Evidence from Roadway Tolls in the Democratic Republic of the Congo,” *Working Paper*, 2017.
- Weigel, Jonathan L**, “The taxman cometh: A virtuous cycle of compliance and state legitimacy in the D.R. Congo,” *Working Paper*, 2018.