

SUPPLEMENT TO “THE STATE CAPACITY CEILING ON TAX RATES: EVIDENCE FROM RANDOMIZED TAX ABATEMENTS IN THE DRC”
(Econometrica, Vol. 92, No. 4, July 2024, 1163–1193)

AUGUSTIN BERGERON
Department of Economics, University of Southern California

GABRIEL TOUREK
Department of Economics, University of Pittsburgh

JONATHAN L. WEIGEL
Haas School of Business, U.C. Berkeley

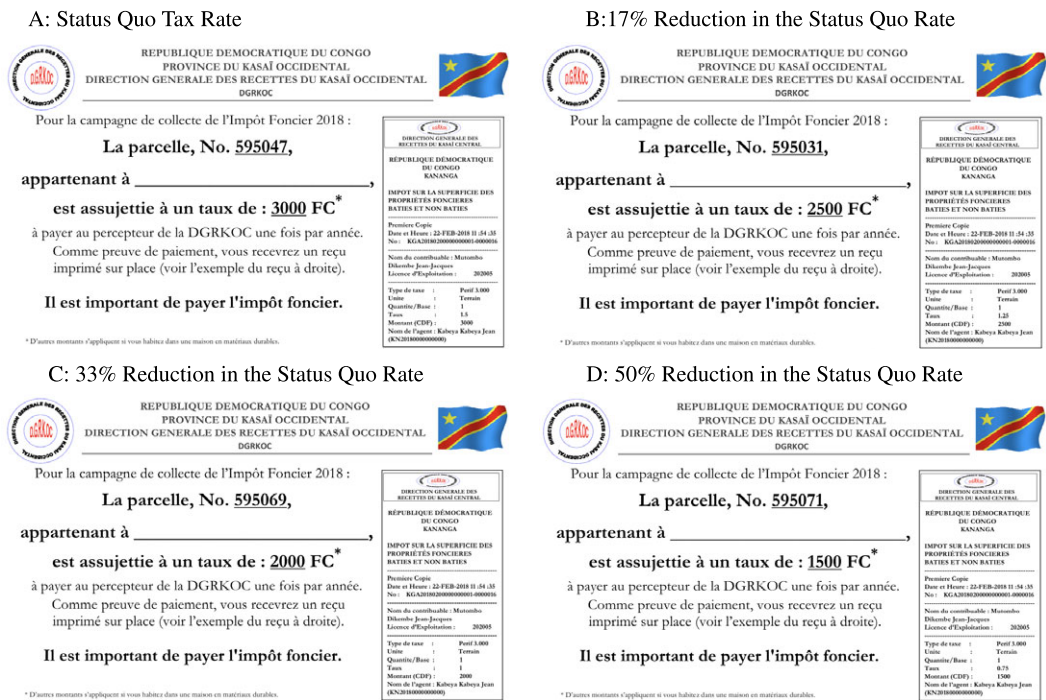


FIGURE A1.—Tax Letters: Examples by Treatment Group. *Notes:* This figure shows examples of tax letters for owners of properties in the low-value band for each of the tax abatement treatment groups. Panel A shows a picture of a letter for a property owner assigned to the status quo annual tax rate (control), and panels B, C, and D show the letter for a property owner assigned to a 17%, 33%, and 50% tax abatement, respectively. The main text of the fliers (from “Pour la campagne...” to “...droite.”) translates in English as: “For the 2018 property tax collection campaign, the property Number [Property ID] belonging to [Property Owner Name] is subject to a tax rate of [Tax Rate] CF to pay to the DGRKOC collector once a year. As proof of payment, you will receive a printed receipt on the spot (see the example of the receipt at right).” The footnote indicated by an asterisk reads: “Other amounts apply if you live in a house made of durable materials.” The randomization of property tax abatements is discussed in Section 3.

Augustin Bergeron: augustin.bergeron@usc.edu
Gabriel Tourek: gabriel.tourek@pitt.edu
Jonathan L. Weigel: jweigel@berkeley.edu

TABLE A1
TAX ABATEMENT TREATMENT ALLOCATION.

Tax Rate Abatement Treatment Groups	Tax Rates by Type of Property			
	Low-value band Properties		High-value band Properties	
	Rate	N	Rate	N
Status Quo Tax Rate	3000 CF	8282	13,200 CF	971
17% Reduction in Tax Rate	2500 CF	8569	11,000 CF	1047
33% Reduction in Tax Rate	2000 CF	8372	8800 CF	1113
50% Reduction in Tax Rate	1500 CF	8633	6600 CF	1041

Note: This table shows the number of properties assigned to each tax abatement treatment. Property owners in the low-value band were randomly assigned to an annual status quo property tax rate of 3000 CF or to tax abatements of 17% (2500 CF), 33% (2000 CF), or 50% (1500 CF). Similarly, property owners in the high-value band were randomly assigned to an annual status quo property tax rate of 13,200 CF or to tax abatements of 17% (11,000 CF), 33% (8800 CF), or 50% (6600 CF). We discuss these treatments in Section 3.3.

TABLE A2
ACTIVITIES OF COLLECTORS, ENUMERATORS, AND LAND SURVEYORS.

Activity	Timing	Observations	Neighborhoods
<i>Tax Campaign—Collectors</i>			
Property registration	May–Dec 2018	44,361	351
Tax collection	May–Dec 2018	38,028	351
<i>Household Surveys—Enumerators</i>			
Baseline survey	Jul–Dec 2017	3358	351
Midline survey	Jun '18–Feb '19	29,634	351
Endline survey	Mar–Sep 2019	2760	351
<i>Collector Surveys—Enumerators</i>			
Baseline survey	Jan–Apr 2018	44	NA
Endline survey	Feb–Apr 2019	33	NA
<i>Other Data—Land Surveyors</i>			
Property value estimation	Aug–Dec 2019	1654	364

Note: This table reports the components of the 2018 property tax campaign and its evaluation. The tax campaign was implemented by tax collectors, the household and collector surveys by enumerators, and the property value estimation by land surveyors. The numbers of observations and neighborhoods in this table reflect the sample used in the main analysis, in which we exclude the 8 neighborhoods where the logistics pilot took place, the 5 pure control neighborhoods in Balan, Bergeron, Tourek, and Weigel (2022) where no door-to-door collection took place, and exempted households (with robustness to alternative samples shown in Table A4). Thus, of the 44,361 properties registered (row 1), only 38,028 properties were nonexempt. As explained in detail in Section 4, the midline sample consists of 29,634 (77.93%) of the 38,028 nonexempted households that the enumerators managed to survey at midline. Attrition from baseline and endline was roughly 10% and is uncorrelated with predicted property value and household income. Enumerators conducted precampaign surveys with the 44 tax collectors studied in Section 7.2, and again with 33 of them at endline. Finally, the property value estimation was conducted with 1654 randomly chosen property owners from the 364 total neighborhoods of Kananga (including those chosen for the logistics pilot and the pure control group in Balan et al. (2022)). These data sources are discussed in Section 4.

TABLE A3
RANDOMIZATION BALANCE.

	Sample (1)	Obs. (2)	Mean status quo (3)	Rate Reductions		
				17% (4)	33% (5)	50% (6)
<u>Panel A: Property Characteristics</u>						
Distance to city center (in km)	Registration	37,790	3.204	0.000 (0.002)	-0.002 (0.002)	0.001 (0.002)
Distance to market (in km)	Registration	37,790	0.809	-0.002 (0.002)	-0.004 (0.002)	-0.002 (0.002)
Distance to gas station (in km)	Registration	37,790	1.924	0.001 (0.002)	-0.001 (0.002)	0.004 (0.002)
Distance to health center (in km)	Registration	37,790	0.350	0.002 (0.002)	0.001 (0.002)	0.003 (0.002)
Distance to government building (in km)	Registration	37,790	0.998	-0.000 (0.002)	-0.001 (0.002)	0.003 (0.002)
Distance to police station (in km)	Registration	37,790	0.801	-0.000 (0.002)	-0.001 (0.002)	0.001 (0.002)
Distance to private school (in km)	Registration	37,790	0.322	-0.001 (0.002)	0.002 (0.002)	0.002 (0.002)
Distance to public school (in km)	Registration	37,790	0.425	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Distance to university (in km)	Registration	37,790	1.314	0.001 (0.002)	-0.001 (0.002)	0.001 (0.002)
Distance to road (in km)	Registration	37,237	0.427	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)
Distance to major erosion (in km)	Registration	37,237	0.128	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)
Roof Quality	Midline	29,740	0.970	-0.004 (0.003)	-0.006 (0.003)	-0.006 (0.003)
Walls Quality	Midline	29,413	1.163	-0.005 (0.005)	-0.006 (0.005)	-0.004 (0.005)
Fence Quality	Midline	27,071	1.391	-0.003 (0.007)	-0.006 (0.007)	-0.011 (0.007)
Erosion Threat	Midline	29,634	0.402	-0.002 (0.008)	-0.007 (0.008)	0.004 (0.008)
Property Value (in USD) Machine Learning Estimate	Registration	38,028	1338	-6.304 (23.484)	3.094 (23.918)	-34.503 (23.409)
<u>Panel B: Property Owner Characteristics</u>						
Employed Indicator	Midline	20,441	0.793	0.006 (0.008)	-0.000 (0.008)	0.013 (0.008)
Salaried Indicator	Midline	20,441	0.265	0.003 (0.009)	-0.006 (0.009)	-0.003 (0.009)
Work for Government Indicator	Midline	20,441	0.157	0.006 (0.007)	-0.002 (0.007)	0.004 (0.007)
Relative Work for Government Indicator	Midline	22,667	0.229	0.008 (0.008)	-0.004 (0.008)	0.012 (0.008)

(Continues)

TABLE A3

Continued.

	Sample (1)	Obs. (2)	Mean status quo (3)	Rate Reductions		
				17% (4)	33% (5)	50% (6)
<u>Panel C: Property Owner Characteristics</u>						
Gender	Baseline	2760	1.339	-0.013 (0.027)	-0.022 (0.027)	-0.001 (0.027)
Age	Baseline	2753	47.763	-1.158 (0.880)	0.232 (0.854)	-0.138 (0.872)
Main Tribe Indicator	Baseline	2760	0.750	0.023 (0.024)	0.022 (0.024)	0.014 (0.025)
Years of Education	Baseline	2751	10.745	-0.112 (0.239)	-0.055 (0.240)	-0.085 (0.244)
Has Electricity	Baseline	2760	0.152	-0.016 (0.020)	-0.005 (0.021)	-0.017 (0.020)
Log Monthly Income (CF)	Baseline	2735	10.687	-0.006 (0.133)	-0.005 (0.133)	-0.209 (0.148)
Trust Chief	Baseline	2749	3.151	-0.013 (0.059)	-0.014 (0.060)	-0.031 (0.060)
Trust National Government	Baseline	2611	2.569	-0.036 (0.073)	-0.095 (0.075)	0.013 (0.074)
Trust Provincial Government	Baseline	2628	2.493	-0.060 (0.071)	-0.030 (0.073)	-0.026 (0.072)
Trust Tax Ministry	Baseline	2600	2.353	0.040 (0.070)	0.011 (0.072)	0.044 (0.071)
<u>Panel D: Attrition</u>						
Registration to Midline	Registration	38,028	0.213	-0.001 (0.004)	-0.002 (0.004)	-0.003 (0.004)

Note: This table reports coefficients from balance tests conducted by regressing baseline and midline characteristics for properties (panel A) and property owners (panels B and C) or an indicator for attrition (panel D) on treatment indicators, with an indicator for the property value band and randomization stratum (neighborhood) fixed effects. Robust standard errors are reported. All balance checks are conducted in the same samples of the primary analysis, which excludes neighborhoods from the logistics pilot, pure control group of Balan et al. (2022) in which no door-to-door collection took place, and exempted households (with robustness to alternative samples shown in Table A4). Specifically, panel A considers the sample of 38,028 nonexempt properties. Rows 1–11 exclude 238 properties with missing GPS information; rows 12–15 use midline surveys conducted with 29,634 property owners; and row 16 uses the predicted property value for the 38,028 nonexempt properties. Panels B and C use 22,667 midline surveys and 2760 baseline surveys with property owners, respectively. Missing values in panels B–C reflect nonresponse to individual survey questions. Panel D contains an indicator for attrition between registration and the midline survey. We cannot test whether attrition between the baseline and endline survey is balanced across treatments since information on treatment assignment for baseline respondents was recovered at endline, and is therefore missing for attriters. The results are summarized in Section 4.1. The variables are described in detail in Section B8.

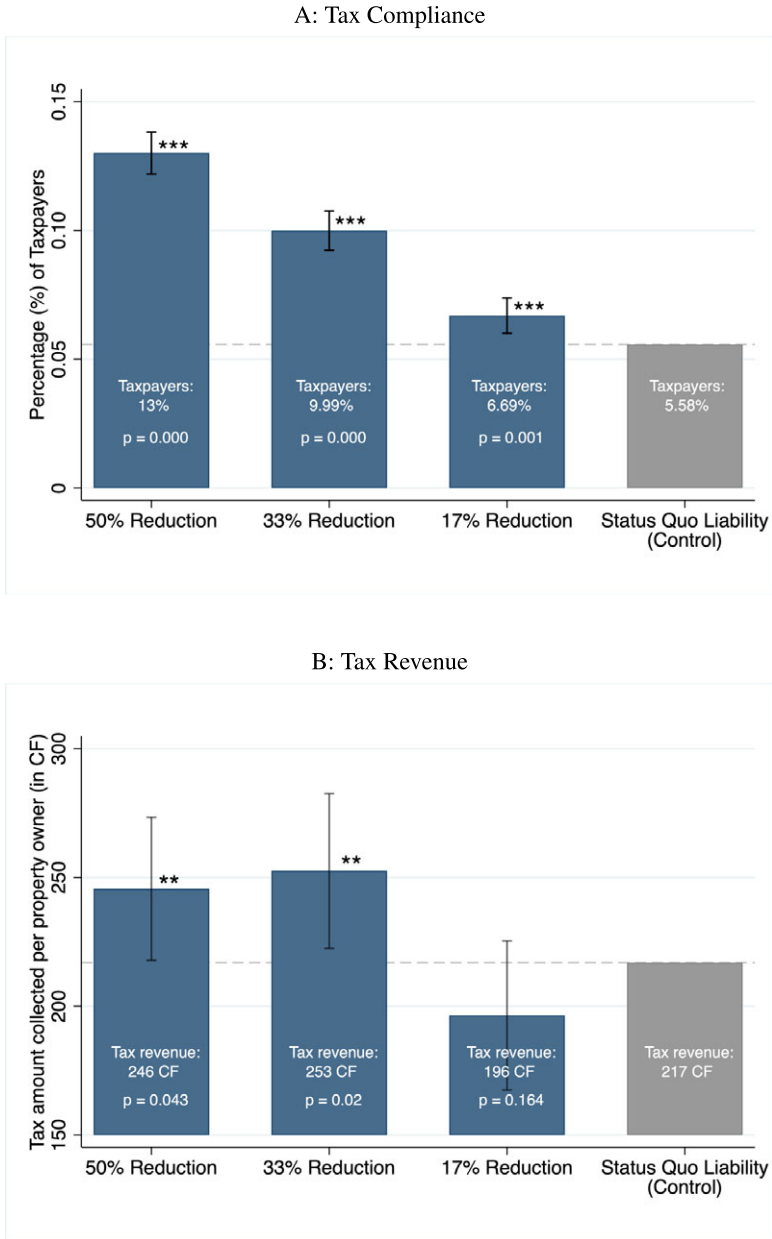


FIGURE A2.—Treatment Effects on Tax Compliance and Revenue. *Notes:* This figure reports estimates from equation (1), comparing property tax compliance and revenue in the tax abatement treatment groups (first three graph bars from the left) relative to the status quo property tax rate (the control group, the last graph bar from the left). Panel A uses an indicator for tax compliance as the dependent variable while panel B uses tax revenue (in Congolese Francs). All estimations include an indicator for the property value band. Panel A corresponds to the results in column 1 of Table 1, while panel B corresponds to the results in column 5 of Table 1. The solid lines show the 95% confidence interval for each of the estimates using robust standard errors. The horizontal dashed line corresponds to the control group’s mean. The figure also reports the average tax compliance (panel A) and revenue (panel B) for the tax abatement treatment groups and the status quo rate group, and the p-values for nonzero treatment effects. The data include all nonexempt properties registered by tax collectors merged with the government’s property tax database. We discuss these results in Section 5.2.

TABLE A4
 ROBUSTNESS: INCLUDING CONTROLS, PILOT NEIGHBORHOODS, PURE CONTROL NEIGHBORHOODS, AND EXEMPT PROPERTIES.

	Outcome: Tax Compliance (Indicator)				Outcome: Tax Revenue (in CF)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<u>Panel A: Treatment Effects</u>												
50% Reduction	0.073 (0.004)	0.073 (0.004)	0.073 (0.004)	0.075 (0.004)	0.072 (0.004)	0.064 (0.004)	24.769 (13.819)	24.565 (13.841)	23.652 (13.817)	27.975 (13.568)	24.809 (13.589)	24.876 (11.970)
33% Reduction	0.044 (0.004)	0.044 (0.004)	0.043 (0.004)	0.045 (0.004)	0.043 (0.004)	0.038 (0.003)	33.328 (14.936)	33.807 (14.953)	32.934 (14.935)	36.914 (14.690)	33.417 (14.646)	28.958 (12.874)
17% Reduction	0.011 (0.003)	0.011 (0.003)	0.011 (0.003)	0.012 (0.003)	0.011 (0.003)	0.010 (0.003)	-20.795 (14.418)	-20.311 (14.423)	-20.517 (14.410)	-18.161 (14.171)	-20.037 (14.156)	-16.924 (12.453)
Mean (control)	0.056	0.056	0.056	0.055	0.055	0.048	216.903	216.903	216.903	214.874	212.696	186.066
<u>Panel B: Marginal Effects</u>												
$\ln(\text{Tax Rate in CF})$	-0.110 (0.006)	-0.110 (0.006)	-0.109 (0.006)	-0.113 (0.006)	-0.108 (0.006)	-0.097 (0.005)	-56.040 (18.256)	-55.642 (18.294)	-54.205 (18.249)	-60.187 (17.936)	-55.712 (17.966)	-52.779 (15.837)
Mean (sample)	0.088	0.088	0.088	0.089	0.087	0.076	229.662	229.662	229.662	229.515	225.588	198.548
<u>Panel C: Elasticities</u>												
Elasticity	-1.247 (0.061)	-1.245 (0.061)	-1.238 (0.060)	-1.267 (0.060)	-1.248 (0.061)	-1.263 (0.062)	-0.244 (0.079)	-0.242 (0.079)	-0.236 (0.079)	-0.262 (0.078)	-0.247 (0.079)	-0.266 (0.080)
p-value (elasticity = 0)							0.0021	0.0022	0.0029	0.0008	0.0018	0.0009
<u>Controls:</u>												
Age, Age-squared, Gender	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No	No
Roof Quality, Distance to Market (Imbalanced)	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No
Employed, Salaried	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Government Job (Self and Fam.)	No	No	Yes	No	No	No	No	No	Yes	No	No	No

(Continues)

TABLE A4
Continued.

	Outcome: Tax Compliance (Indicator)					Outcome: Tax Revenue (in CF)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Adjustments:												
Includes Pilot Nbdhs.	No	No	No	Yes	No	No	No	No	No	Yes	No	No
Includes Pure Control Nbdhs.	No	No	No	No	Yes	No	No	No	No	No	Yes	No
Includes Exempted Properties	No	No	No	No	No	Yes	No	No	No	No	No	Yes
Observations Sample	38,028 Midline sample	38,028 Midline sample	38,028 Midline sample	38,899 All properties	38,744 All properties	44,361 All properties	38,028 Midline sample	38,028 Midline sample	38,028 Midline sample	38,899 All properties	38,744 All properties	44,361 All properties
FE: Property Value Band	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE: Neighborhood	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table explores a series of robustness checks concerning the main treatment effects on compliance and revenue. It reports estimates from equations (1), (2), and (3). In columns 1–6, the dependent variable is an indicator for compliance, while in columns 7–12, the dependent variable is tax revenue (in Congolese Francs). Panel A reports treatment effects from equation (1) comparing property tax compliance and property tax revenue for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). Panel B reports the mean tax compliance and revenue as well as the marginal effect of property tax rates (in CF) on tax compliance and revenue from equation (2). These two estimates are used in panel C to compute the elasticity of tax compliance and revenue with respect to the tax rate following equation (3) and to calculate the p-value associated with the elasticity of tax revenue. All regressions include an indicator for the property value band and randomization stratum (neighborhood) fixed effects. Panels A and B report robust standard errors. Standard errors in panel C are bootstrapped (with 1000 iterations). Columns 1 and 7 control for basic covariates (age, age squared, and gender), measured at baseline; columns 2 and 8 add controls for roof quality and distance to the nearest market (the imbalanced covariates in Table A3); columns 3 and 9 add controls for having any job, a salaried job, and a government job, and a family member with a government job. When including controls, we replace missing values in control variables with the mean for the entire sample and include a separate dummy (for each control variable) for the value being missing. Columns 4 and 10 include pilot neighborhoods; columns 5 and 11 include pure control neighborhoods; and columns 6 and 12 include exempt properties. The data include all properties registered by tax collectors merged with the government's property tax database. We discuss these results in Section 5.2.

APPENDIX: TREATMENT EFFECTS ON SECONDARY OUTCOMES

This section explores if lowering tax rates had adverse outcomes from the perspective of the government by fueling bribe payments, crowding out other tax payments, or eroding the perceived legitimacy of the government.

A.1. *Bribe Payments*

Lowering tax rates could potentially backfire by leading tax collectors to extract more bribes.⁶¹ For instance, collectors might have asked property owners in the tax abatement treatment groups to pay part of the difference between the status quo rate and the reduced rate as a bribe in order to receive a tax receipt.

We test this possibility using survey data on bribe payments to property tax collectors in the midline survey. Enumerators asked respondents if they paid the “transport” of the collectors—a colloquial expression for bribes—and if so, the amount of the payment. While these measures of bribe payments are self-reported and should therefore be interpreted with caution, reporting petty bribes is not taboo in Kananga.⁶² According to these measures, we find no evidence that lowering tax rates increased bribe payments. If anything, lower tax rates are associated with fewer bribe payments on the extensive margin (Table A5, panel A, row 1). Although the negative effects on bribe payments are only statistically significant when analyzing the 50% reduction treatment, the elasticity of bribe payments with respect to the tax rate, and bootstrapped standard error, is $\hat{\epsilon}_{B,T} = 0.706$ (0.180). On the intensive margin, the magnitude of the equilibrium bribe also appears to decrease among households assigned to the 50% and 33% rate reduction treatments (Table A5, panel A, row 2), yielding an elasticity of $\hat{\epsilon}_{B,T} = 1.604$ (0.210).

Although we prefer the midline bribe measures because of the large sample, we also explore alternative measures of bribes and other informal payments to tax collectors collected in the endline survey, including (i) the gap between self-reported payments and payment according to the administrative data (Table A5, panel A, row 3), and (ii) self-reported bribe payments (Table A5, panel A, rows 4–6). Reestimating treatment effects and elasticities using these measures, the results are qualitatively similar though not statistically significant. Thus, although there is some evidence that property owners switched from bribes to tax payments when the rate was sufficiently low, this conclusion is suggestive at best.

A.2. *Payment of Other Taxes*

Lowering property tax rates could also backfire, from the government’s point of view, if it crowds out payment of other taxes. For example, higher tax compliance in response to lower property tax rates could reduce payment of other taxes if citizens have a fixed budget or a mental model in which enforcement risk declines sharply for the partially compliant.⁶³

In Kananga, the most common “tax” to which citizens contribute is actually an informal labor levy called *salongo*. *Salongo* is organized on a weekly basis by neighborhood chiefs

⁶¹Khan, Khwaja, and Olken (2015) demonstrate the importance of examining how bribes respond to tax policy changes.

⁶²For instance, Reid and Weigel (2019) find that nearly half of motorcycle taxi drivers openly admitted to paying bribes at Kananga’s roadway tolls using similar local codes for bribes. The authors also show a high correlation between more and less overt bribe elicitation mechanisms.

⁶³This section builds on the literature on fiscal externalities across tax instruments (Waseem (2018)).

TABLE A5
TREATMENT EFFECTS ON SECONDARY OUTCOMES: BRIBE PAYMENTS, PAYMENT OF OTHER TAXES, VIEWS OF THE GOVERNMENT.

Dependent variable	Treatment Effects				Marginal Effects				Elasticity		Sample			
	50% Reduction		33% Reduction		17% Reduction		Status Quo		ln(Tax Rate in CF)		$\hat{\beta}$	SE	Obs.	Sample
	$\hat{\beta}$ (1)	SE (2)	$\hat{\beta}$ (3)	SE (4)	$\hat{\beta}$ (5)	SE (6)	\bar{y} (7)	$\hat{\beta}$ (8)	SE (9)	\bar{y} (10)	$\hat{\beta}$ (11)	SE (12)	(13)	(14)
Panel A: Bribes														
Paid Bribe	-0.007	0.002	-0.002	0.002	0.001	0.002	0.019	0.012	0.003	0.017	0.706	0.172	25,558	Midline
Bribe Amount	-28.209	5.182	-17.455	5.820	-8.232	6.438	39.467	40.553	6.480	25.286	1.604	0.209	25,558	Midline
Gap Self v. Admin	-0.005	0.006	-0.010	0.006	-0.003	0.006	0.103	0.008	0.008	0.098	0.082	0.081	19,146	Midline
Paid Bribe	0.000	0.020	-0.015	0.018	-0.004	0.022	0.027	0.002	0.027	0.034	0.059	0.878	951	Endline
Bribe Amount	-0.538	22.376	-27.530	19.693	-8.189	22.339	27.232	4.000	31.355	29.715	0.135	1.162	949	Endline
Other Payments	-0.019	0.019	-0.038	0.018	-0.018	0.019	0.136	0.029	0.026	0.118	0.246	0.221	2753	Endline
Panel B: Payments of Other Taxes														
Participation to Salongo	0.009	0.009	0.007	0.009	0.007	0.009	0.374	-0.012	0.013	0.376	-0.032	0.034	18,924	Midline
Hours of Salongo	0.145	0.142	0.077	0.099	-0.033	0.085	1.510	-0.245	0.196	1.539	-0.159	0.129	18,426	Midline
Paid Vehicle Tax	0.005	0.011	-0.005	0.010	-0.003	0.011	0.038	-0.008	0.014	0.036	-0.222	0.403	2752	Endline
Paid Market Vendor Fee	-0.031	0.022	-0.033	0.022	-0.007	0.022	0.208	0.049	0.030	0.185	0.265	0.166	2757	Endline
Paid Business Tax	-0.009	0.013	-0.018	0.013	-0.015	0.013	0.067	0.010	0.018	0.053	0.189	0.337	2753	Endline
Paid Income Tax	0.002	0.018	0.009	0.019	0.000	0.018	0.116	-0.006	0.025	0.115	-0.052	0.219	2751	Endline
Paid Obsolete Tax	0.002	0.007	0.002	0.007	0.013	0.008	0.013	0.003	0.010	0.017	0.176	0.605	2725	Endline

(Continues)

TABLE A5
Continued.

Dependent variable	Treatment Effects				Marginal Effects				Elasticity		Sample			
	50% Reduction		33% Reduction		17% Reduction		Status Quo		ln(Tax Rate in CF)		SE	Sample		
	$\hat{\beta}$ (1)	SE (2)	$\hat{\beta}$ (3)	SE (4)	$\hat{\beta}$ (5)	SE (6)	\bar{y} (7)	$\hat{\beta}$ (8)	SE (9)	\bar{y} (10)	$\hat{\beta}$ (11)	SE (12)	Obs. (13)	Sample (14)
Panel C: Views of the Government														
Trust in Provincial Government	-0.069	0.049	-0.033	0.051	-0.013	0.050	1.770	0.100	0.066	1.761	0.057	0.038	2739	Endline
Provincial Government Performance	0.028	0.067	0.043	0.068	0.074	0.067	3.878	-0.010	0.089	3.924	-0.003	0.023	2687	Endline
Provincial Government Corruption	3.212	20.012	18.631	19.989	1.080	19.668	567.274	-9.591	27.225	572.370	-0.017	0.048	2760	Endline
Trust in Tax Ministry	-0.027	0.055	-0.003	0.056	0.026	0.055	2.038	0.055	0.074	2.035	0.027	0.036	2743	Endline
Tax Ministry Performance	-0.120	0.070	-0.064	0.071	-0.019	0.071	4.138	0.178	0.097	4.080	0.044	0.025	2691	Endline
Tax Ministry Corruption	34.549	18.617	20.410	18.473	34.927	18.598	399.903	-35.066	25.367	422.366	-0.083	0.060	2743	Endline
Fairness Prop. Tax	-0.021	0.033	-0.010	0.032	0.021	0.034	2.021	0.044	0.045	2.008	0.022	0.024	2745	Endline
Fairness Tax Rates	0.121	0.049	0.121	0.049	0.123	0.048	1.293	-0.138	0.066	1.384	-0.100	0.049	2513	Endline
Fairness Tax Coll.	0.005	0.042	-0.027	0.042	0.005	0.041	1.687	0.004	0.057	1.688	0.002	0.034	2466	Endline

Note: Each row summarizes the estimation of equations (1), (2), and (3). Columns 1-7 summarize the OLS estimation of equations (1), (2), and (3). Columns 8-10 summarize the OLS estimation of equations (1), (2), and (3) followed by the property value band and randomization stratum. The $\hat{\beta}$ are the coefficients on the treatment indicators (in columns 1, 3, and 5 for the 50%, 33%, and 17% tax abatements, respectively) followed by robust standard errors (in columns 2, 4, and 6). \bar{y} indicates the mean outcome in the control—status quo tax rate—group (column 7). Columns 8-10 summarize the OLS estimation of equation (2). $\hat{\beta}$ is the marginal effect of property tax rates (in CF) on the outcome of interest (column 8), followed by the robust standard error (column 9) and \bar{y} , the mean outcome in the sample (column 10). Columns 11-12 summarize the estimation of equation (3) and present the elasticity of the outcome of interest with respect to the tax rate (column 11) and the bootstrapped standard errors (column 12), using the standard deviation across 1000 bootstrap samples with replacement. Finally, the last two columns provide the number of observations (column 13) and the sample used, midline or endline (column 14). In panel A, the outcome in rows 1 and 4 are indicators for self-reported bribe payment in the midline and endline surveys, respectively. Rows 2 and 5 report results for the corresponding amount of bribe paid. The outcome in row 3 indicates property owners who reported paying the tax during the midline survey but who were not recorded as having paid in the administrative data. The outcome in row 6 is self-reported payment of any informal fee at endline. In panel B, the outcome in rows 1 and 2 are indicators for participation in *salongo* and the number of hours devoted to *salongo* at midline, respectively. The outcome in rows 3-7 are indicators from the endline survey for the payment of the vehicle tax (row 3), the market vendor fee (row 4), the business tax (row 5), the income tax (row 6), or a fake tax (row 7). In panel C, the outcomes are standardized indices measuring trust, perceived performance, and corruption of the provincial government (rows 1-3) and of the provincial tax ministry (rows 4-6), followed by the perceived fairness of property tax collection (row 7), tax rates (row 8), and tax collectors (column 9). The number of observations varies across variables in the same survey due to nonresponse. Additionally, analysis of the gap between self-reported and administratively verified tax payments (row 3) restricts the sample to households deemed noncompliant in the admin data, while analysis of endline bribe measures (rows 4-5) restricts to the set of households reporting any post-registration visits from collectors (who had opportunities to pay bribes). Midline and endline survey data collection is described in Section 4, and the variables used in this table are described in Section B8. We discuss these results in Section .

and involves citizens contributing labor (or occasionally cash or in-kind contributions) to local public good projects, such as road repair and trash collection. In our midline data, 37.6% of citizens reported participating in *salongo* in the past 2 weeks, with those participating contributing 4.2 hours on average over this period. We estimate treatment effects of property tax rate reductions on reported *salongo* participation in (Table A5, panel B, rows 1–2). There are no significant effects on the extensive or intensive margin.

Other formal taxes paid by citizens in Kananga include the vehicle tax (3.6% of endline respondents reported paying), market vendor fees (18.5%), the business tax (5.3%), and the income tax (11.5%). Although these measures are self-reported, our questionnaire included an obsolete poll tax included to gauge possible reporting bias. Estimating treatment effects in the familiar specification, we find no evidence that property tax rate reductions crowded out payment of other formal taxes (Table A5, panel B, rows 3–7).

A.3. *Views of the Government*

Finally, tax rate reductions could backfire if they cause citizens to update negatively about the government. This could be the case if lowering tax rates were perceived by citizens as signaling that property tax payment is less important or obligatory than they had previously thought, or if it signals a lack of state capacity to enforce compliance at higher rates.⁶⁴

We investigate this possibility using endline survey data on citizens' trust in the provincial government, perceptions of the performance of the government, and perceptions of government corruption—as well as corresponding measures for the provincial tax ministry. As shown in panel C of Table A5, we find no evidence that reductions in tax rates affected views of the provincial government (rows 1–3) or of the provincial tax ministry (rows 5–7). Distributing property tax abatements does not appear to have eroded citizens' attitudes about the government.

Finally, we examine citizens' perceptions of the fairness of the property tax, an important component of tax morale (Luttmer and Singhal (2014), Best, Gerard, Kresch, Naritomi, and Zoratto (2020)). The endline survey included questions about citizens' perceptions of the fairness of property tax collection, property tax rates, and tax collectors. Lower rates do not appear to have affected respondents' perception of the fairness of the property tax (Table A5, panel C, row 7) or of the property tax collectors (row 9). They did, however, increase how fair citizens viewed property tax rates, with a sizable elasticity of -0.100 (0.048) (row 8).

⁶⁴This vein of analysis is motivated by recent work documenting how tax collection shapes citizens' views of the legitimacy and capacity of the government (Jibao, Prichard, and Van den Boogaard (2017), Weigel (2020)).

TABLE A6

TREATMENT EFFECTS ON REVENUE—ROBUSTNESS: ACCOUNTING FOR KNOWLEDGE OF OTHERS' RATES, PAST RATES, EXPECTATIONS OF FUTURE RATES, AND PAST EXPOSURE TO TAX COLLECTION.

	Outcome: Tax Revenue (in CF)										
	Neighbors' Rate			Discounts			Past Rates			Past Tax Campaign	
	Ctrl for 5 (1)	Ctrl for 10 (2)	Doesn't Know (3)	Knows (4)	Doesn't Know (5)	Knows (6)	Doesn't Know (7)	Knows (8)	No (9)	Yes (10)	
Panel A: Treatment Effects											
50% Reduction	24.829 (13.829)	24.603 (13.843)	31.000 (24.196)	2.066 (63.235)	-2.676 (35.987)	-64.522 (680.464)	51.831 (77.198)	133.677 (176.085)	39.711 (24.254)	15.271 (16.647)	
33% Reduction	33.947	34.167	42.073	42.736	71.435	-621.510	-32.192	72.279	23.625	40.434	
17% Reduction	-20.193 (14.421)	-20.023 (14.422)	-38.543 (24.935)	(61.768) (66.992)	(39.649) (37.663)	(1129.941) (642.694)	(80.482) (81.063)	(211.148) (207.580)	(25.358) (24.764)	(18.432) (17.602)	
Mean (control)	216.903	216.903	258.357	330.055	227.411	634.286	301.250	428.571	225.726	211.524	
Tests of coef. equality:											
50% Reduction	$P_{33\%} = 0.992$			$P_{50\%} = 0.647$			$P_{50\%} = 0.555$			$P_{50\%} = 0.343$	
33% Reduction	$P_{17\%} = 0.883$			$P_{33\%} = 0.499$			$P_{33\%} = 0.516$			$P_{33\%} = 0.675$	
17% Reduction	$P_{All\%} = 0.925$			$P_{17\%} = 0.399$			$P_{17\%} = 0.433$			$P_{17\%} = 0.765$	
All Reductions				$P_{All\%} = 0.865$			$P_{All\%} = 0.882$			$P_{All\%} = 0.353$	
Panel B: Marginal Effects											
ln(Tax Rate in CF)	-55.992 (18.274)	-55.651 (18.305)	-76.148 (32.165)	-30.241 (87.645)	-41.952 (46.021)	294.168 (1174.460)	-119.342 (107.128)	-195.964 (232.279)	-78.392 (31.950)	-42.766 (22.013)	
Mean (sample)	229.662	229.662	272.444	317.748	225.010	399.320	328.565	329.177	239.047	223.150	

(Continues)

TABLE A6
Continued.

	Outcome: Tax Revenue (in CF)									
	Neighbors' Rate		Discounts		Past Rates		Neighbors' Rate		Past Tax Campaign	
	Ctrl for 5 (1)	Ctrl for 10 (2)	Doesn't Know (3)	Knows (4)	Doesn't Know (5)	Knows (6)	Doesn't Know (7)	Knows (8)	No (9)	Yes (10)
Panel C: Elasticities										
Elasticity	-0.244 (0.082)	-0.242 (0.082)	-0.280 (0.174)	-0.095 (2.529)	-0.186 (0.194)	0.737 (2.978)	-0.363 (0.350)	-0.595 (0.733)	-0.328 (0.140)	-0.192 (0.103)
p-value (elasticity = 0)	0.0030	0.0032	0.1073	0.9700	0.3371	0.8056	0.2998	0.4176	0.0188	0.0630
Observations	38,028	38,028	13,046	2158	5098	147	2069	401	14,590	23,296
Sample	All	All	Midline	Midline	Midline	Midline	Baseline	Baseline	All	All
FE: Property Value Band	properties	properties	Yes	Yes	Yes	Yes	Yes	Yes	properties	properties
FE: Neighborhood	Yes	Yes	No	No	No	No	No	No	No	No
Neighbor Rate Controls	Yes	Yes	No	No	No	No	No	No	No	No

Note: This table explores whether other components of the experimental design could have influenced taxpayers' responses to tax abatements. It reports estimates from equations (1), (2), and (3). The dependent variable is tax revenue (in Congolese Francs). Panel A reports treatment effects from equation (1) comparing property tax revenue for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). It also reports the p-values associated with F-tests for equality of the treatment effects when considering heterogeneity by knowledge of others' rates (columns 3-4), tax reduction (columns 5-6), past rates (columns 7-8), and by past exposure to tax collection (columns 9-10). Panel B reports the mean tax revenue in the sample as well as the marginal effect of property tax rates (in CF) on tax revenue from equation (2). These two estimates are used in panel C to compute the elasticity of tax revenue with respect to the tax rate following equation (3) and to calculate the p-value associated with the elasticity of tax revenue. All regressions include an indicator for the property value band and for randomization stratum (neighborhood). Panels A and B report robust standard errors. Standard errors in panel C are bootstrapped (with 1000 iterations). The effects are reported for: owners who reported not knowing or knowing their neighbors' rate in columns 3-4; owners who reported knowing or not knowing about the existence of tax abatements in Kananga in columns 5-6; and owners who accurately reported the status quo rate or not in columns 7-8. The variables that define these subsamples come from the baseline and midline survey (indicated in the bottom panel of the table) and are described in Section B8. Columns 9 and 10 estimate treatment effects for neighborhoods where door-to-door tax collection took place during the previous (2016) property tax campaign and neighborhoods where no door-to-door collection took place, using the treatment assignment from Weigel (2020). The sample in columns 3-6 is smaller than the total midline sample because these questions were introduced after midline enumeration began, and the question about knowledge of discounts randomly appeared for a subset of respondents (to increase the pace of survey administration). We discuss these results in Section 5.3.

TABLE A7
ROBUSTNESS: ACCOUNTING FOR NEIGHBORS' TAX RATES.

	Outcome: Tax Compliance (Indicator)			Outcome: Tax Revenue (in CF)		
	Neighbors' Rate Controls			Neighbors' Rate Controls		
	No (1)	Closest 5 (2)	Closest 10 (3)	No (4)	Closest 5 (5)	Closest 10 (6)
50% Reduction	0.073150 (0.004057)	0.073183 (0.004058)	0.073185 (0.004058)	24.710779 (13.828226)	24.828665 (13.829044)	24.602730 (13.842639)
33% Reduction	0.043992 (0.003790)	0.043958 (0.003789)	0.044011 (0.003789)	34.069000 (14.937406)	33.946848 (14.933235)	34.166802 (14.930843)
17% Reduction	0.011407 (0.003415)	0.011395 (0.003416)	0.011418 (0.003415)	-20.202272 (14.420118)	-20.192966 (14.420714)	-20.023098 (14.421936)
1st Neighbor Rate		-0.000000 (0.000001)	-0.000001 (0.000001)		-0.001699 (0.003547)	-0.002459 (0.003577)
2nd Neighbor Rate		0.000001 (0.000001)	0.000001 (0.000001)		0.002359 (0.003799)	0.001639 (0.003811)
3rd Neighbor Rate		0.000001 (0.000001)	0.000001 (0.000001)		0.005773 (0.003811)	0.005070 (0.003842)
4th Neighbor Rate		0.000000 (0.000001)	0.000000 (0.000001)		0.000953 (0.003733)	0.000093 (0.003753)
5th Neighbor Rate		0.000001 (0.000001)	0.000001 (0.000001)		0.000917 (0.003500)	0.000069 (0.003524)
6th Neighbor Rate			0.000000 (0.000001)			0.001143 (0.003505)
7th Neighbor Rate			0.000001 (0.000001)			0.003014 (0.003708)
8th Neighbor Rate			0.000000 (0.000001)			0.004828 (0.003887)
9th Neighbor Rate			-0.000001 (0.000001)			-0.003529 (0.003357)
10th Neighbor Rate			0.000002 (0.000001)			0.005235 (0.003549)
Mean (control)	0.056	0.056	0.056	216.903	216.903	216.903
Observations	38,028	38,028	38,028	38,028	38,028	38,028
Sample	All properties	All properties	All properties	All properties	All properties	All properties
FE: Property Value Band	Yes	Yes	Yes	Yes	Yes	Yes
FE: Neighborhood	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table examines treatment effects on tax compliance and tax revenue (in Congolese Francs). It reports treatment effects from equation (1) comparing property tax revenue for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). All regressions include an indicator for the property value band and for randomization stratum (neighborhood). We report robust standard errors. The dependent variable is tax compliance in columns 1–3 and tax revenue in columns 4–6. Columns 2 and 5 control for the property tax rate assigned to the nearest 5 properties (using the GPS location of all properties in Kananga). Columns 3 and 6 control for the property tax rate assigned to the nearest 10 properties. The effects of the nearest properties' tax rate on tax compliance and tax revenue are reported. We discuss these results in Section 5.3.

TABLE A8

ROBUSTNESS: ACCOUNTING FOR DIFFERENTIAL TAX COLLECTOR ENFORCEMENT EFFORT BY RATE.

	Outcome: Visit Indicator			Outcome: Number of Visits		
	All (1)	Constant Wage (2)	Proportional Wage (3)	All (4)	Constant Wage (5)	Proportional Wage (6)
Panel A: Treatment Effects						
50% Reduction	0.026 (0.009)	0.038 (0.012)	0.015 (0.012)	0.027 (0.014)	0.043 (0.022)	0.015 (0.020)
33% Reduction	0.016 (0.009)	0.015 (0.012)	0.016 (0.012)	0.001 (0.014)	-0.012 (0.021)	0.014 (0.020)
17% Reduction	0.013 (0.009)	0.016 (0.012)	0.011 (0.012)	0.014 (0.015)	-0.001 (0.021)	0.025 (0.022)
Mean (control)	0.407	0.409	0.404	0.560	0.579	0.541
Tests of coef. equality:						
50% Reduction		$p_{50\%} = 0.182$			$p_{50\%} = 0.336$	
33% Reduction		$p_{33\%} = 0.934$			$p_{33\%} = 0.366$	
17% Reduction		$p_{17\%} = 0.782$			$p_{17\%} = 0.377$	
All Reductions		$p_{All\%} = 0.463$			$p_{All\%} = 0.183$	
Panel B: Marginal Effects						
ln(Tax Rate in CF)	-0.034 (0.012)	-0.049 (0.017)	-0.020 (0.016)	-0.031 (0.020)	-0.056 (0.029)	-0.012 (0.027)
Mean (sample)	0.422	0.429	0.416	0.570	0.586	0.554
Panel C: Elasticities						
Elasticity	-0.081 (0.027)	-0.114 (0.039)	-0.049 (0.040)	-0.055 (0.034)	-0.095 (0.048)	-0.021 (0.049)
Observations	23,054	11,411	11,643	22,893	11,335	11,558
Sample	Midline	Midline	Midline	Midline	Midline	Midline
	Sample	Sample	Sample	Sample	Sample	Sample
FE: Property Value Band	Yes	Yes	Yes	Yes	Yes	Yes
FE: Neighborhood	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table explores the possibility that collectors exerted enforcement effort differentially across rates, which could magnify the estimated responses to rate reductions. It reports estimates from equations (1), (2), and (3). In columns 1–3, the dependent variable is an indicator for the property owner reporting any visits by tax collectors after property registration. Panel A reports treatment effects from equation (1) comparing visits for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). It also reports the p-values associated with F-tests for equality of the treatment effects when considering heterogeneity by wage group (columns 2–3 and 5–6). Panel B reports the mean visits as well as the marginal effect of property tax rates (in CF) on visits from equation (2). These two estimates are used in panel C to compute the elasticity of visits with respect to the tax rate following equation (3). In columns 4–6, the dependent variable is the number of visits by tax collectors after property registration reported by property owners. Columns 1 and 4 consider all properties. Columns 2 and 5 restrict the sample to properties randomly assigned to the constant tax collector wage group (750 FC per collection), while columns 3 and 6 restrict to properties assigned to the proportional collector wage group (30% of the amount collected). Collectors' wage is discussed in Section B1.2. The data include all non-exempt properties registered by tax collectors merged with the government's property tax database. We discuss these results in Section 5.3.4.

TABLE A9
ROBUSTNESS: ACCOUNTING FOR THE EFFECTS OF DIFFERENTIAL TAX COLLECTOR ENFORCEMENT EFFORT BY RATE ON COMPLIANCE AND REVENUE.

	Outcome: Tax Compliance (Indicator)					Outcome: Tax Revenue (in CF)				
	Constant	Proportional	Wage	Visit Ind.	Nb of Visits	Constant	Proportional	Wage	Visit Ind.	Nb of Visits
	Wage (1)	Wage (2)	FEs (3)	Ctrl (4)	Ctrl (5)	Wage (6)	Wage (7)	FEs (8)	Ctrl (9)	Ctrl (10)
<u>Panel A: Treatment Effects</u>										
50% Reduction	0.076 (0.006)	0.078 (0.006)	0.076 (0.004)	0.081 (0.006)	0.082 (0.006)	27.805 (13.125)	32.103 (13.049)	28.267 (9.201)	17.611 (11.953)	18.872 (12.030)
33% Reduction	0.046 (0.006)	0.048 (0.006)	0.046 (0.004)	0.049 (0.005)	0.051 (0.005)	34.540 (14.003)	39.966 (13.948)	35.431 (9.837)	30.898 (12.740)	33.397 (12.833)
17% Reduction	0.011 (0.005)	0.018 (0.005)	0.014 (0.004)	0.011 (0.005)	0.011 (0.005)	-1.087 (14.154)	16.983 (14.311)	6.431 (10.034)	-6.041 (13.004)	-6.106 (13.088)
Mean (control)	0.057	0.057	0.057	0.067	0.068	170.13	171.081	170.611	202.205	203.545
Tests of coef. equality:										
50% Reduction	$p_{50\%} = 0.783$									
33% Reduction	$p_{33\%} = 0.736$									
17% Reduction	$p_{17\%} = 0.338$									
All Reductions	$p_{All\%} = 0.817$									
<u>Panel B: Marginal Effects</u>										
$\ln(\text{Tax Rate in CF})$	-0.115 (0.009)	-0.115 (0.009)	-0.114 (0.006)	-0.123 (0.008)	-0.124 (0.008)	-50.296 (17.495)	-48.060 (17.400)	-47.038 (12.267)	-37.292 (15.871)	-39.874 (15.967)
Mean (sample)	0.090	0.093	0.092	0.105	0.105	185.536	192.217	188.888	216.405	217.119

(Continues)

TABLE A9
Continued.

	Outcome: Tax Compliance (Indicator)					Outcome: Tax Revenue (in CF)				
	Constant Wage (1)	Proportional Wage (2)	Wage FEs (3)	Visit Ind. Ctrl (4)	Nb of Visits Ctrl (5)	Constant Wage (6)	Proportional Wage (7)	Wage FEs (8)	Visit Ind. Ctrl (9)	Nb of Visits Ctrl (10)
Panel C: Elasticities										
Elasticity	-1.271 (0.093)	-1.235 (0.089)	-1.241 (0.063)	-1.171 (0.071)	-1.183 (0.072)	-0.271 (0.097)	-0.250 (0.091)	-0.249 (0.065)	-0.172 (0.074)	-0.184 (0.075)
p-value (elasticity = 0)						0.0053	0.0063	0.0001	0.0199	0.0137
Observations	16,870	16,986	33,856	23,054	22,893	16,870	16,986	33,856	23,054	22,893
Sample	All	All	All	Midline	Midline	All	All	All	Midline	Midline
FE: Property Value Band	Properties Yes	Properties Yes	Properties Yes	Sample Yes	Sample Yes	Properties Yes	Properties Yes	Properties Yes	Sample Yes	Sample Yes
FE: Neighborhood	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE: Wage Group	No	No	Yes	No	No	No	No	Yes	No	No
Visit Controls	No	No	No	Yes	Yes	No	No	No	Yes	Yes

Note: This table explores the effects of collectors potentially exerting enforcement effort differentially across rates on the estimated responses to rate reductions. It reports estimates from equations (1), (2), and (3). In columns 1–5, the dependent variable is an indicator for property tax compliance. In columns 6–10, the dependent variable is tax revenue (in Congolese Francs). Panel A reports treatment effects from equation (1) comparing property tax compliance or revenue for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). It also reports the p-values associated with F-tests for equality of the treatment effects when considering heterogeneity by wage group (columns 1–2, and 6–7). Panel B reports the mean property tax compliance or revenue as well as the marginal effect of property tax rates (in CF) on property tax compliance or revenue from equation (2). These two estimates are used in panel C to compute the elasticity of tax compliance or revenue with respect to the tax rate following equation (3) and to calculate the p-value associated with the elasticity of tax revenue. Columns 1 and 6 restrict the sample to properties randomly assigned to the constant tax collector wage group (750 FC per collection). Columns 2 and 7 restrict to properties assigned to the proportional collector wage group (30% of the amount collected). Collectors' wage is discussed in Section B1.2. In columns 3–5 and 8–10, all cases of tax compliance are considered, and we control for a collector wage (constant or proportional indicator (columns 3 and 8)), a visit indicator (columns 4 and 9), and for the number of visits (columns 5 and 10). The data include all nonexempt properties registered by tax collectors merged with the government's property tax database. We discuss these results in Section 5.3.4.

TABLE A10
TREATMENT EFFECTS ON OWNERS' KNOWLEDGE AND COLLECTORS' STRATEGIES.

	Collector Messages												
	Knowledge						Public goods						Other Threat
	Nb Rate	Knows Reductions	Knows Past Rate	Sanctions Chief	Sanctions Tax Ministry	Neighborhood Kananga	Show Trust in Gov	It's Important	Legal Obligation	Avoid Social Embarrassment			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
50% Reduction	-0.011 (0.008)	-0.004 (0.007)	-0.019 (0.025)	0.008 (0.025)	-0.003 (0.026)	-0.003 (0.025)	0.018 (0.025)	-0.014 (0.026)	-0.064 (0.026)	-0.003 (0.025)	0.008 (0.023)	-0.005 (0.022)	
33% Reduction	-0.014 (0.008)	0.003 (0.007)	-0.000 (0.025)	0.029 (0.024)	0.030 (0.026)	0.051 (0.026)	0.035 (0.025)	-0.006 (0.026)	-0.022 (0.026)	0.008 (0.025)	0.015 (0.023)	0.022 (0.023)	
17% Reduction	-0.005 (0.008)	0.002 (0.007)	-0.030 (0.024)	-0.033 (0.024)	-0.021 (0.025)	0.014 (0.025)	0.037 (0.025)	-0.012 (0.025)	-0.036 (0.026)	-0.009 (0.025)	-0.015 (0.022)	-0.007 (0.023)	
Mean (control)	0.149	0.029	0.167	0.256	0.278	0.263	0.232	0.324	0.452	0.383	0.203	0.230	
Observations	15,072	5245	2209	2743	2743	2743	2743	2743	2743	2743	2743	2743	
Sample	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FE: Property Value Band	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FE: Neighborhood	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Note: This table examines treatment effects on owners' knowledge of tax rates, tax abatements, and past tax rates as well as the different possible messages used by collectors when demanding payment, as measured in the midline and endline surveys. It reports the treatment effects from equation (1) comparing the outcome of interest for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). The dependent variable in column 1 is an indicator for knowing the neighbors' property tax rate. In column 2, it is an indicator for knowing about the existence of tax abatements. In column 3, it is an indicator for knowing the status quo tax rate. In columns 4-12, the outcomes are indicators for the different messages used by the property tax collectors during tax collection: sanctions by the chief (Column 4), sanctions by the tax ministry (column 5), provision of public goods in the neighborhood (column 6) or in Kananga (column 7), showing trust in the government (in column 8), the importance of paying the property tax (column 9), tax compliance as a legal obligation (column 10), social embarrassment associated with tax delinquency (column 11), and any other threats in the case of tax delinquency (column 12). All regressions include an indicator for the property value band and for randomization stratum (neighborhood). We report robust standard errors. The variables are described in Section B8. We discuss these results in Section 5.3.

TABLE A11
KNOWLEDGE OF STATUS QUO TAX RATE BY PAST ASSIGNMENT TO DOOR-TO-DOOR PROPERTY TAX COLLECTION.

<i>Outcome:</i>	Has Heard of Tax Ministry		Has Heard of Property Tax		Accurately reported status quo tax rate		
	2016 Treatment Vs Control (1)		2016 Treatment Vs Control (2)		2016 Treatment Vs Control (3)	Paid in 2016 Treatment Vs Control–Self-Reported (4)	Paid in 2016 Treatment Vs Control–Administrative Data (5)
<i>Sample:</i>							
Past door-to-door collection	0.070 (0.021)		0.058 (0.034)		0.033 (0.016)	0.078 (0.023)	0.134 (0.040)
Control Mean	0.833		0.492		0.142	0.142	0.142
Observations	1607		2426		2423	1465	1101
Sample	Baseline Sample Yes Yes		Baseline Sample Yes Yes		Baseline Sample Yes Yes	Baseline Sample Yes Yes	Baseline Sample Yes Yes
FE: Property Value Band							
FE: Neighborhood							

Note: This table examines the treatment effects of assignment to door-to-door tax collection in the 2016 property tax campaign, using the treatment assignment from Weigel (2020), on knowledge of the tax ministry (column 1), knowledge of the property tax (column 2), and an indicator for the property owner accurately reporting the status quo tax rate at baseline in 2017 (columns 3–5). Columns 1–3 report the results when considering all baseline respondents. Columns 4–5 include everyone in the control group from Weigel (2020), where no door-to-door tax collection took place in 2016, compared to tax-compliant households in the treatment group from Weigel (2020), where tax collection did occur in 2016. In column 4, tax compliance status is self-reported, while in column 5, it is measured using administrative data. All regressions include an indicator for the property value band and the randomization strata from Weigel (2020). Standard errors are clustered at the neighborhood level, the unit of randomization in Weigel (2020). The data include all property owners surveyed at baseline merged with the government’s property tax databases. We discuss these results in Section 5.3.

TABLE A12
HETEROGENEOUS TREATMENT EFFECTS ON COMPLIANCE BY PROXIES FOR LIQUIDITY.

		Outcome: Tax Compliance (Indicator)											
		Monthly Income		Weekly Transport		Number of Possessions		Went to Bed Hungry— Past Month		Can find 3000 CF— Next 4 Days		Nb of days w/o 3000 CF— Past Month	
		≤median	>median	≤median	>median	≤median	>median	Yes	No	No	Yes	>median	≤median
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Treatment Effects													
50% Reduction		0.141 (0.031)	0.070 (0.030)	0.131 (0.032)	0.072 (0.029)	0.124 (0.022)	0.052 (0.045)	0.076 (0.031)	0.119 (0.031)	0.127 (0.025)	0.069 (0.038)	0.119 (0.027)	0.102 (0.038)
33% Reduction		0.066 (0.028)	0.022 (0.029)	0.058 (0.029)	0.007 (0.026)	0.056 (0.021)	-0.020 (0.045)	0.080 (0.030)	0.011 (0.027)	0.065 (0.023)	0.011 (0.037)	0.062 (0.025)	-0.009 (0.035)
17% Reduction		0.037 (0.026)	-0.043 (0.027)	0.007 (0.027)	-0.044 (0.025)	0.016 (0.019)	-0.109 (0.040)	0.009 (0.025)	-0.033 (0.026)	0.010 (0.021)	-0.024 (0.034)	-0.016 (0.022)	-0.014 (0.033)
Mean (control)		0.069	0.104	0.069	0.102	0.066	0.150	0.065	0.108	0.076	0.113	0.085	0.096
Tests of coef. equality:													
50% Reduction		$p_{50\%} = 0.058$		$p_{50\%} = 0.117$		$p_{50\%} = 0.263$		$p_{50\%} = 0.259$		$p_{50\%} = 0.128$		$p_{50\%} = 0.664$	
33% Reduction		$p_{33\%} = 0.197$		$p_{33\%} = 0.138$		$p_{33\%} = 0.149$		$p_{33\%} = 0.048$		$p_{33\%} = 0.140$		$p_{33\%} = 0.053$	
17% Reduction		$p_{17\%} = 0.012$		$p_{17\%} = 0.113$		$p_{17\%} = 0.006$		$p_{17\%} = 0.187$		$p_{17\%} = 0.295$		$p_{17\%} = 0.966$	
All Reductions		$p_{All\%} = 0.072$		$p_{All\%} = 0.291$		$p_{All\%} = 0.055$		$p_{All\%} = 0.018$		$p_{All\%} = 0.368$		$p_{All\%} = 0.145$	
Panel B: Marginal Effects													
ln(Tax Rate in CF)		-0.198 (0.042)	-0.130 (0.041)	-0.202 (0.045)	-0.127 (0.040)	-0.183 (0.031)	-0.132 (0.064)	-0.129 (0.042)	-0.184 (0.042)	-0.192 (0.034)	-0.115 (0.052)	-0.198 (0.037)	-0.153 (0.053)
Mean (sample)		0.138	0.125	0.132	0.130	0.124	0.151	0.123	0.139	0.129	0.136	0.137	0.121

(Continues)

TABLE A12
Continued.

		Outcome: Tax Compliance (Indicator)											
		Monthly Income		Weekly Transport		Number of Possessions		Went to Bed Hungry— Past Month		Can find 3000 CF— Next 4 Days		Nb of days w/o 3000 CF— Past Month	
		≤median (1)	>median (2)	≤median (3)	>median (4)	≤median (5)	>median (6)	Yes (7)	No (8)	No (9)	Yes (10)	>median (11)	≤median (12)
Panel C: Elasticities													
Elasticity		-1.438 (0.334)	-1.041 (0.343)	-1.526 (0.368)	-0.977 (0.329)	-1.482 (0.270)	-0.875 (0.451)	-1.05 (0.369)	-1.323 (0.323)	-1.492 (0.276)	-0.850 (0.391)	-1.446 (0.278)	-1.264 (0.473)
Observations		1348	1405	1317	1436	1983	777	1346	1414	1816	944	1769	991
Sample		Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Endline	Endline	Endline	Endline	Endline	Endline
FE: Property Value Band		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE: Neighborhood		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table investigates how the effect of tax abatements on compliance varies by household liquidity. It reports estimates from equations (1), (2), and (3). The dependent variable is an indicator for tax compliance. Panel A reports treatment effects from equation (1) comparing property tax compliance for the tax abatement treatment groups relative to the status quo property tax rate (the excluded category). It also reports the p-values associated with F-tests for equality of the treatment effects when considering heterogeneity by monthly income (columns 1–2), weekly transport expenditures (columns 3–4), number of possessions (columns 5–6), going to bed hungry in the past 30 days (columns 7–8), being able to find 3000 CF in the next 4 days (columns 9–10), number of days the respondent did not have 3000 CF in the past 30 days (columns 11–12). Panel B reports the mean tax compliance as well as the marginal effect of property tax rates (in Congolese Francs) on tax compliance from Equation (2). These two estimates are used in Panel C to compute the elasticity of tax compliance with respect to the tax rate following equation (3). All regressions include an indicator for the property value band and for randomization stratum (neighborhood). Panels A and B report robust standard errors. Standard errors in Panel C are bootstrapped (with 1000 iterations). Columns 1, 3, and 5 restrict the baseline sample to respondents with below-median monthly household income, weekly transport expenditures, and number of possessions, respectively. Columns 2, 4, and 6 restrict the baseline sample to respondents with above-median monthly household income, weekly transport expenditures, and number of possessions, respectively. Columns 7–8 report results by whether endline respondents declared that they went to bed hungry in the past 30 days. Columns 9 and 10 report results by whether respondents declare being able to find 3000 CF in the next four days. Columns 11–12 report results by whether the number of days the respondent reported not having 3000 CF in the past month at endline is above or below the median. The variables come from the baseline and endline surveys and are described in Section B8. We discuss these results in Section B6.3.1.

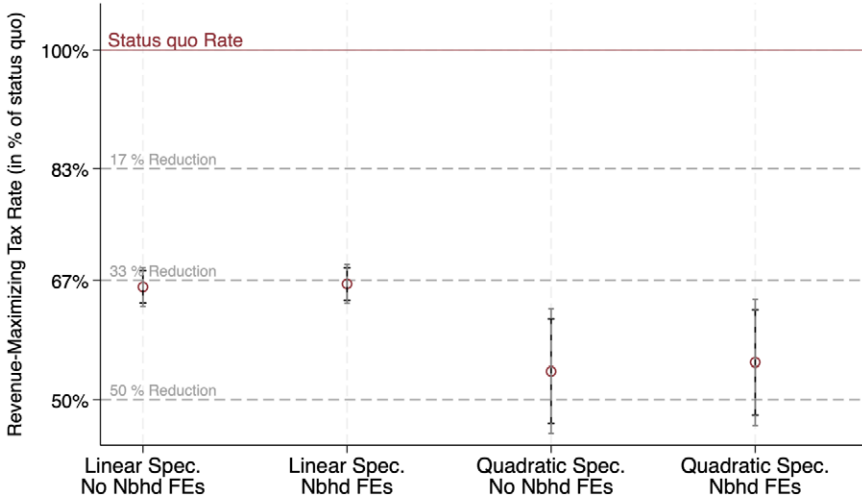


FIGURE A3.—The Revenue-Maximizing Tax Rate. *Notes:* This figure reports estimates of the revenue-maximizing tax rate (RMTR) using the expression in equation (4). The first two estimates assume linearity of tax compliance with respect to the tax rate and correspond to the estimation of equation (5) using regression specification (6), while the following two estimates assume a quadratic relationship between tax compliance and tax rate. All estimates of the RMTR are expressed as a percentage of the status quo tax rate. All regressions include an indicator for the property value band, and the second- and fourth-point estimates also include randomization stratum (i.e., neighborhood, or “Nbhd”) fixed effects. The dashed lines show the 90% confidence interval and the solid lines the 95% confidence interval for each estimate using the standard errors obtained from the delta method. The coefficients and confidence intervals correspond to the point estimates and standard errors reported in Table 3 (panel B). The data include all nonexempt properties registered by tax collectors merged with the government’s property tax database. We discuss these results in Section 6.3.

TABLE A13
EFFECTS OF TAX LETTER MESSAGES ON TAX COMPLIANCE AND REVENUE.

	Tax Compliance			Tax Revenue (in CF)		
	(1)	(2)	(3)	(4)	(5)	(6)
Central Enforcement	0.014 (0.009)	0.016 (0.009)		32.837 (18.610)	36.510 (18.453)	
Local Enforcement	0.014 (0.009)	0.016 (0.009)		31.244 (18.723)	35.545 (18.783)	
Pooled Enforcement			0.016 (0.007)			36.038 (15.589)
Observations	2665	2665	2665	2665	2665	2665
Mean	0.029	0.029	0.029	57.671	57.671	57.671
Sample	Tax Message Sample	Tax Message Sample	Tax Message Sample	Tax Message Sample	Tax Message Sample	Tax Message Sample
FE: Property Value Band	Yes	Yes	Yes	Yes	Yes	Yes
FE: Neighborhood	No	Yes	Yes	No	Yes	Yes

Note: This table examines the treatment effects of randomized tax letter enforcement messages on compliance, revenue, and perceived sanctions for tax delinquents. It reports estimates from a regression of tax compliance (columns 1–3) and tax revenue (columns 4–6) on treatment dummies for households assigned to enforcement messages on tax letters distributed during property registration. Sections 7.1 and B1.4 describe these tax letters and the message randomization. The excluded category is the control message in all regressions. Columns 2–3 and 5–6 introduce randomization stratum (neighborhood) fixed effects. Columns 3 and 6 pool households assigned to the *central enforcement* message and the *local enforcement* message. The data are restricted to the sample of 2665 properties subject to randomized messages on tax letters, which were introduced toward the end of the tax campaign. We discuss these results in Section 7.1.

TABLE A14
EFFECTS OF TAX LETTER MESSAGES ON PERCEIVED SANCTIONS AND STATE CAPACITY.

	Likelihood of Sanctions			Perceived State Capacity			Number of Visits		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Central Enforcement	0.064 (0.031)	0.058 (0.029)		0.077 (0.089)	0.011 (0.107)		0.037 (0.042)	0.055 (0.040)	
Local Enforcement	0.019 (0.032)	0.022 (0.030)		0.001 (0.089)	-0.052 (0.100)		-0.027 (0.039)	0.003 (0.036)	
Pooled Enforcement			0.041 (0.025)			-0.021 (0.091)			0.030 (0.033)
Observations	1553	1553	1553	193	193	193	1859	1859	1859
Mean	0.478	0.478	0.478	0.492	0.492	0.492	0.434	0.434	0.434
Sample	Tax Message & Midline Sample	Tax Message & Midline Sample	Tax Message & Midline Sample	Tax Message & Baseline Sample	Tax Message & Baseline Sample	Tax Message & Baseline Sample	Tax Message & Midline Sample	Tax Message & Midline Sample	Tax Message & Midline Sample
FE: Property Value Band	v	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE: Neighborhood	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

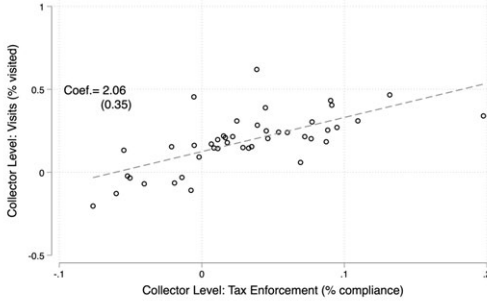
Note: This table examines the treatment effects of randomized tax letter enforcement messages on perceived sanctions for tax delinquency, perceived state capacity, and visits by tax collectors. It reports estimates from a regression of an indicator for households reporting that sanctions for tax delinquency are “likely” or “very likely” (columns 1–3), an indicator for respondents reporting that the provincial government would be able to repair the main roads in Kananga within 3 months if they had been badly damaged due to bad weather (columns 4–6), and the number of tax collectors’ visits after property registration reported by the respondent (columns 7–9) on treatment dummies for households assigned to enforcement messages on tax letters distributed during property registration. Sections 7.1 and B1.4 describe these tax letters and the message randomization. The excluded category is the control message in all regressions. Columns 2–3, 5–6, and 8–9 introduce randomization stratum (neighborhood) fixed effects. Columns 3, 6, and 9 pool households assigned to the *central enforcement* message and the *local enforcement* message. The data are restricted to the sample of 2665 properties subject to randomized messages on tax letters, which were introduced toward the end of the tax campaign, but the sample size is smaller in all columns because the outcomes come from the midline survey (columns 1–3 and 7–9) and the baseline survey (columns 4–6), rather than the administrative data. We discuss these results in Section 7.1.

TABLE A15
REVENUE-MAXIMIZING TAX RATE BY ENFORCEMENT CAPACITY (TAX LETTER VARIATION).

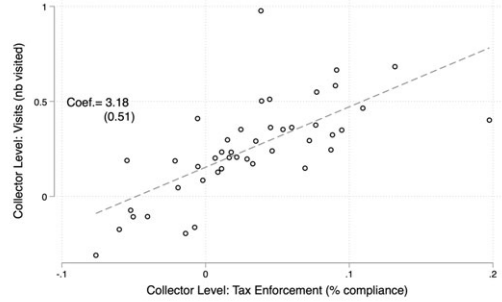
	Control Message			Enforcement Message				
	Linear Specification (1)	Linear Specification (2)	Quadratic Specification (3)	Linear Specification (4)	Linear Specification (5)	Quadratic Specification (6)	Quadratic Specification (7)	Quadratic Specification (8)
Panel A: Effect of Tax Rates on Tax Compliance								
Tax Rate (in % of status quo)	-0.082 (0.032)	-0.083 (0.033)	-0.379 (0.336)	-0.399 (0.327)	-0.061 (0.025)	-0.053 (0.025)	0.192 (0.266)	0.210 (0.261)
Tax Rate Squared (in % of status quo)			0.196 (0.211)	0.210 (0.209)			-0.169 (0.172)	-0.175 (0.170)
Constant	0.091 (0.028)	0.092 (0.028)	0.197 (0.128)	0.203 (0.123)	0.088 (0.020)	0.082 (0.021)	-0.001 (0.097)	-0.010 (0.096)
Panel B: Revenue-Maximizing Tax Rate (RMTR)								
RMTR (in % of status quo rate)	0.557 (0.061)	0.554 (0.063)	0.361 (0.101)	0.354 (0.093)	0.724 (0.138)	0.779 (0.190)	0.756 (0.052)	0.772 (0.050)
Implied Reduction in Tax Rate	44.32%	44.57%	63.91%	64.57%	27.63%	22.12%	24.35%	22.75%
Observations	893	893	893	893	1772	1772	1772	1772
Sample	Tax Message Yes	Tax Message Yes	Tax Message Yes	Tax Message Yes	Tax Message Yes	Tax Message Yes	Tax Message Yes	Tax Message Yes
FE: Property Value Band	No	Yes	No	Yes	No	Yes	No	Yes
FE: Neighborhood	No	Yes	No	Yes	No	Yes	No	Yes
Quadratic Tax Rate Term	No	No	Yes	Yes	No	No	Yes	Yes

Note: This table examines how the revenue-maximizing tax rate (RMTR), given by equation (4), varies by enforcement capacity using the variation in messages embedded in tax letters. Columns 1-2 and 5-6 assume linearity of tax compliance with respect to the tax rate. Panel A reports results from estimating equation (6), and panel B reports the corresponding RMTR from equation (5). Columns 3-4 and 7-8 assume a quadratic relationship between tax compliance and tax rate. Panel A reports the regression results, and panel B reports the RMTR. All estimates in panels A and B are expressed as a percentage of the status quo tax rate. All regressions include an indicator for the property value band, and columns 2, 4, 6, and 8 also include randomization stratum (neighborhood) fixed effects. In panel A, we report robust standard errors. In panel B, we report standard errors computed using the delta method. The data are restricted to the sample of 2665 properties exposed to randomized messages on tax letters. Columns 1-4 further restrict the sample to owners who received the *control* message and columns 5-8 to owners who received an enforcement message (*central enforcement* or *local enforcement*). We discuss these results in Section 7.1.

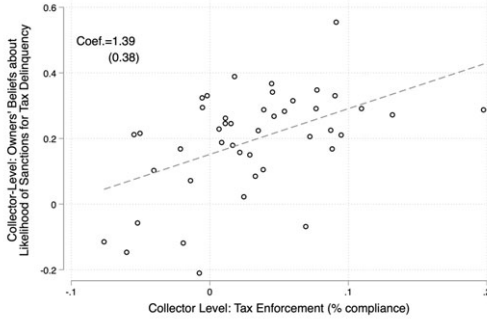
A: Visit Indicator



B: Number of Visits



C: Perceptions of Sanctions
(No Controls)



D: Perceptions of Sanctions
(Number of Visits Controls)

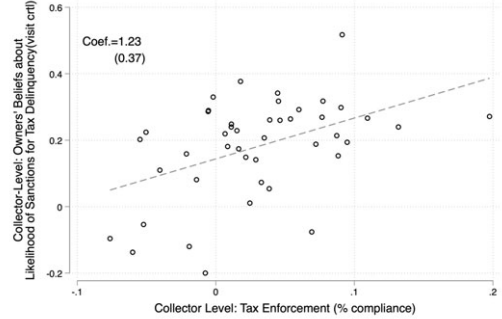


FIGURE A4.—Collector Enforcement Capacities vs. Frequency of Collector Visits and Perceptions of Sanctions. *Notes:* This figure shows correlations between the collector-specific enforcement capacities and average reported visits and beliefs about the probability of sanctions for tax delinquents in neighborhoods to which collectors were randomly assigned. The x-axis reports estimates of tax collector enforcement capacity using regression specification (7), expressed as the percentage of owners who pay the property tax in all neighborhoods to which a collector was randomly assigned. In panels A and B, the y-axis reports the collector-level visits on the extensive and intensive margins as reported by households in the midline survey. In panels C and D, the y-axis reports property owners’ midline perception of sanctions for tax delinquency at the collector level. This variable is measured as an indicator for households reporting that sanctions for tax delinquency are “likely” or “very likely.” All y-axis estimates are from empirical specification (7). We discuss these results in Section 7.2.

TABLE A16
COLLECTOR ENFORCEMENT CAPACITIES AND REVENUE-MAXIMIZING TAX RATES.

	Level-Level		Log-Log	
	OLS (1)	Empirical Bayes (2)	OLS (3)	Empirical Bayes (4)
<u>Panel A: RMTR from Linear Specification</u>				
Enforcement Capacity	2.421 (0.819)	2.797 (0.666)		
ln(Enforcement Capacity)			0.623 (0.215)	0.465 (0.108)
Observations	44	44	42	41
<u>Panel B: RMTR from Quadratic Specification</u>				
Enforcement Capacity	1.587 (0.831)	1.597 (0.755)		
ln(Enforcement Capacity)			0.347 (0.159)	0.112 (0.050)
Observations	44	44	43	43
Sample	All state tax collectors	All state tax collectors	All state tax collectors	All state tax collectors

Note: This table examines the relationship between tax collectors' revenue-maximizing tax rates (RMTR) and their enforcement capacities. Collector-specific enforcement capacities are estimated using regression specification (7). In columns 1–4, the collector-specific RMTR assumes linearity of tax compliance with respect to the tax rate and is obtained from estimating equation (8). In columns 5–8, the collector-specific RMTR assumes a quadratic relationship between tax compliance and the tax rate. Columns 1, 3, 5, and 7 report the fixed-effects estimates, while columns 2, 4, 6, and 8 report the empirical Bayes estimates described in Section B4. Columns 1–2 and 5–6 report the results of a level-level regression, while columns 3–4 and 7–8 use the log-log specification $\ln(\widehat{T}_c^*) = \alpha + \beta \ln(\widehat{E}_c) + \nu_c$ and can be interpreted as an elasticity. We discuss these results in Section 7.2.

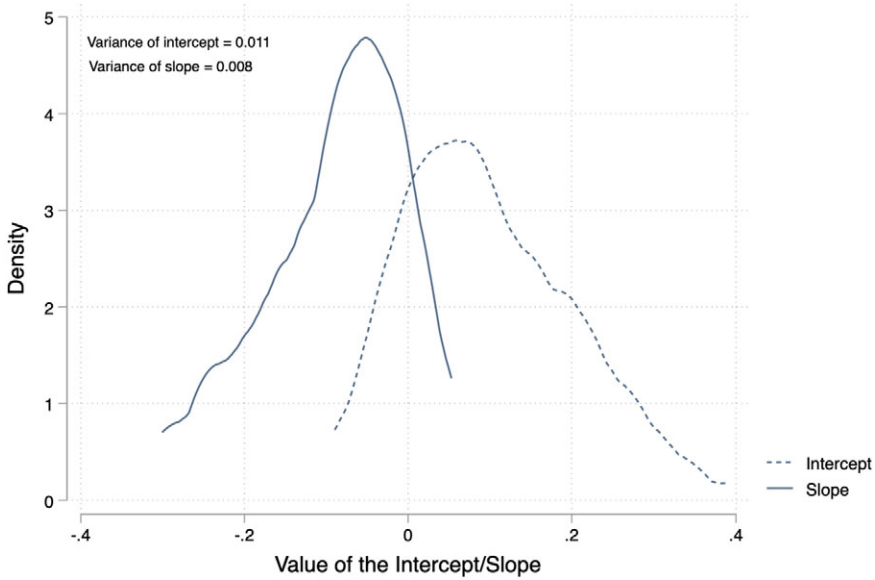


FIGURE A5.—Distribution of Collector Slopes and Intercepts. *Notes:* This figure reports the distribution of the coefficients estimated from regression specification (8). Specifically, the dashed line reports the kernel density of the collector-level intercepts (β_c^0 in equation (8)) and the solid line reports the kernel density of the collector-level slopes (β_c^1 in equation (8)). The kernel densities use the default (Epanechnikov) kernel function and bandwidth. To document whether the differences in the RMTR across collectors is generated by differences in their intercepts or slopes, the figure also reports the variance of the collector-level intercepts ($\text{Var}(\beta_c^0) = 0.011$) and the variance of the collector-level slopes ($\text{Var}(\beta_c^1) = 0.008$). We discuss these results in Section 7.2.

TABLE A17
EFFECT OF COLLECTOR ENFORCEMENT CAPACITY ON INTERCEPT AND SLOPE.

	Outcome: Tax Compliance (Indicator)		Outcome: Tax Revenue (in CF)	
	(1)	(2)	(3)	(4)
High-Ability Collector	0.066 (0.031)	0.098 (0.028)	107.792 (57.547)	158.119 (59.571)
Tax Rate (in % of status quo)	-0.115 (0.022)	-0.115 (0.022)	-79.122 (54.389)	-77.694 (54.362)
High-Ability Collector × Tax Rate (in % of status quo)	-0.043 (0.027)	-0.043 (0.027)	-12.954 (64.808)	-14.668 (64.737)
Constant	0.146 (0.025)	0.114 (0.022)	162.135 (49.302)	121.651 (52.638)
Observations	23,777	23,777	23,777	23,777
Sample	Collector Sample	Collector Sample	Collector Sample	Collector Sample
FE: Property Value Band	Yes	Yes	Yes	Yes
FE: Treatment from Balan et al.	No	Yes	No	Yes

Note: This table examines whether tax collectors with above median enforcement capacity are characterized by higher tax compliance across all rates (i.e., β_0 in equation (6)) or differentially affect tax compliance by tax rates (i.e., β_1 in equation (6)). We estimate the following regression specification: $y_{i,n} = \beta_0 1[c_1(n) = H \text{ or } c_2(n) = H] + \beta_2 \text{Tax Rate}_{i,n} + \beta_3 1[c_1(n) = H \text{ or } c_2(n) = H] \times \text{Tax Rate}_{i,n} + X'_{i,n} \gamma + \epsilon_{i,n}$, where $y_{i,n}$ measures the outcome of interest (tax compliance or revenue) for individual i living in neighborhood n . $c_1(n)$ and $c_2(n)$ are the two collectors assigned to collect in neighborhood n and $1[c_1(n) = H \text{ or } c_2(n) = H]$ is an indicator for either or both of the collectors' fixed effects—estimated in equation (7)—being above median. $\text{Tax Rate}_{i,n}$ is the tax rate expressed as a percentage of the status quo rate. In columns 1–4, $X_{i,n}$ contains an indicator for properties in the high-value band. In columns 2 and 4, it also includes an indicator for the neighborhood-level interventions described in Balan et al. (2022). The dependent variable is an indicator for compliance in columns 1–2 and tax revenue (in Congolese Francs) in columns 3–4. We discuss these results in Section 7.2.

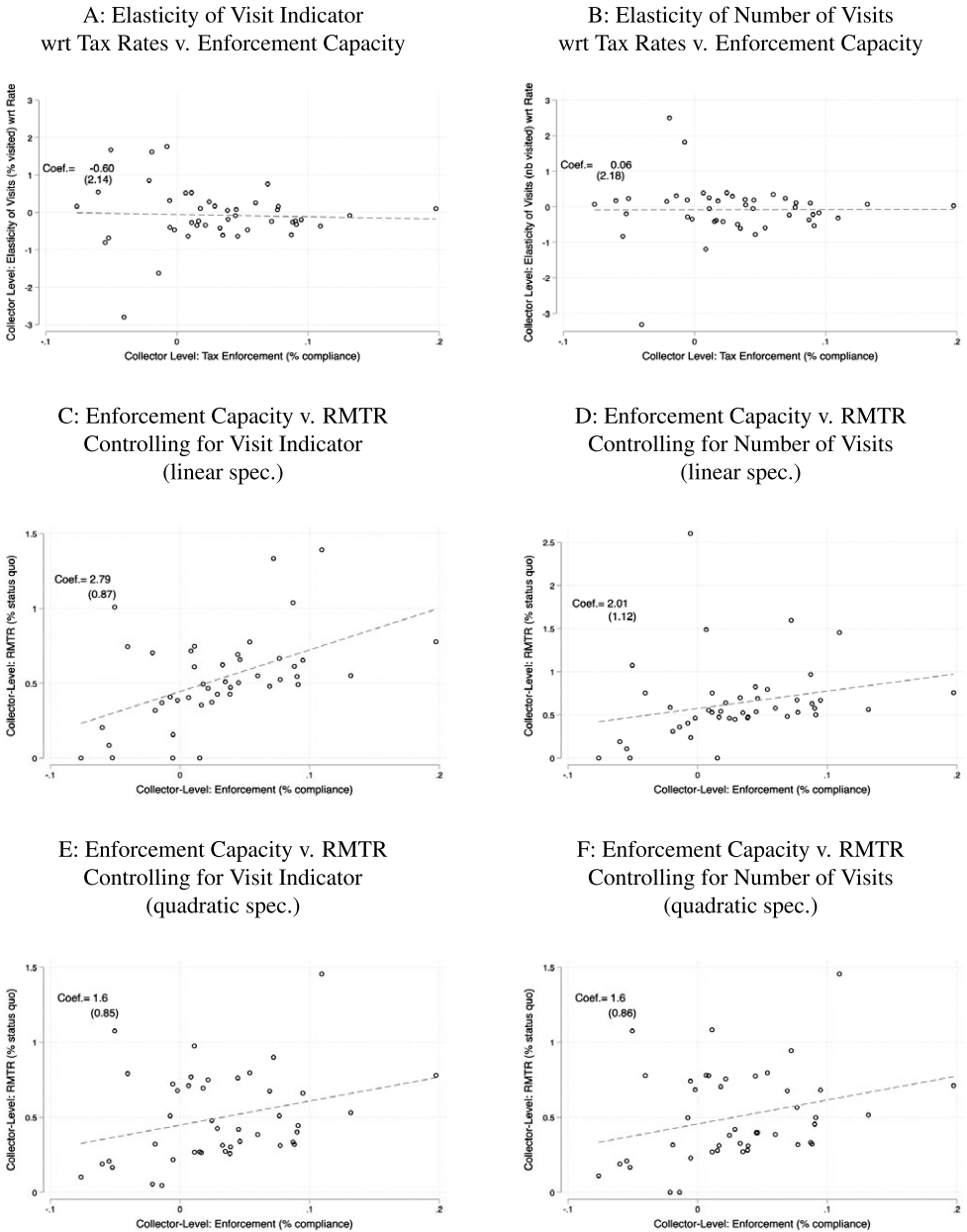


FIGURE A6.—Collector Enforcement Capacities and Visits by Rate. *Notes:* This figure examines whether high-enforcement collectors exhibit differential elasticity of tax visits by rate and whether controlling for tax visits impacts the observed relationship between collector enforcement capacities and revenue-maximizing tax rates (RMTR). The x-axis of this figure always reports estimates of tax collector enforcement capacity using regression specification (7), expressed as the percentage of owners who pay the property tax. In panels A and B, the y-axis reports the collector-level elasticity of visits on the extensive margin (panel A) and the intensive margin (panel B) with respect to tax rates. In panels C–F, the y-axis reports the collector-specific RMTR in equation (4) controlling for visits on the extensive margin (panels C and D) and extensive margin (panels E and F). When estimating the collector-specific RMTR, we assume linearity in panels C and D and estimate equation (8), while in panels E and F we assume a quadratic relationship between tax compliance and tax rate. We discuss these results in Section 7.2.

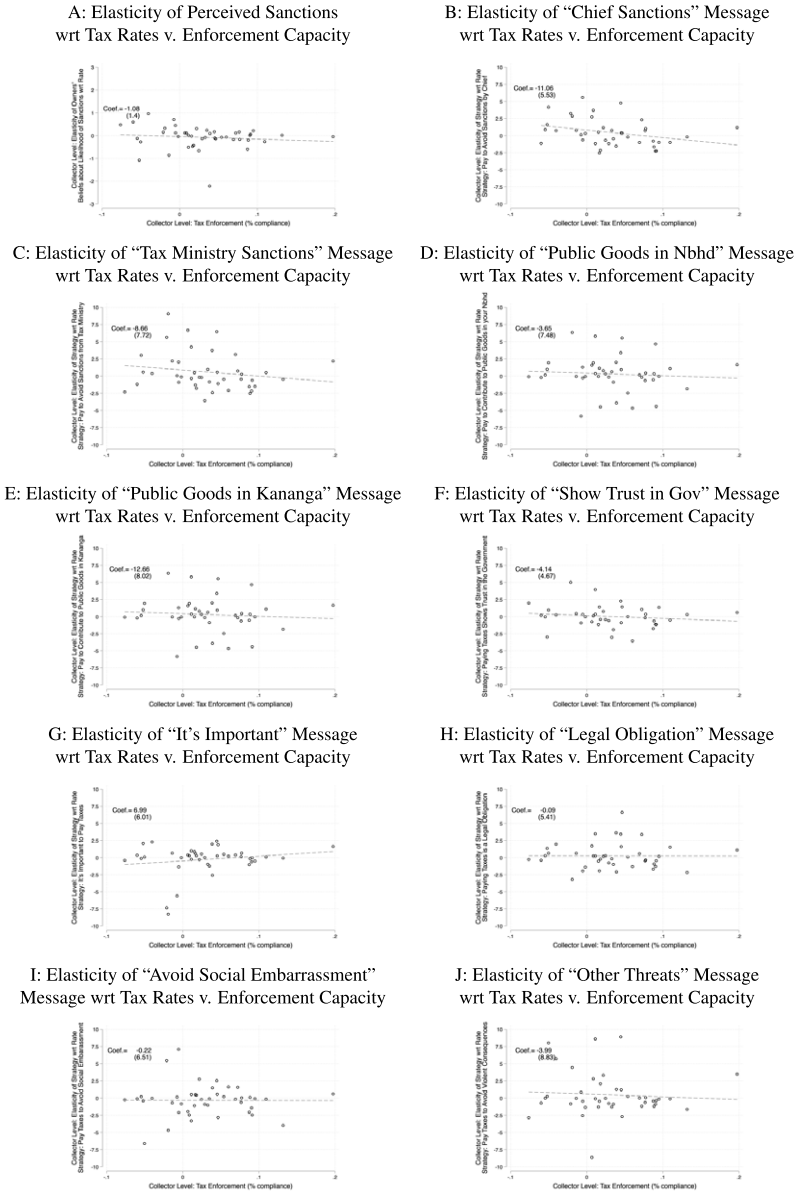


FIGURE A7.—Collector Enforcement Capacities and Perceived Likelihood of Sanctions or Collector Message by Rate. *Notes:* This figure examines whether high-enforcement collectors result in a different elasticity of owners’ beliefs about the likelihood of sanction for tax delinquency with respect to the tax rate (panel A) and a different elasticity of collector messages by rate (panels B–J). The x-axis of this figure always reports estimates of tax collector enforcement capacity using regression specification (7), expressed as the percentage of owners who pay the property tax. In panels A, the y-axis reports the collector-level elasticity of owners’ beliefs about the likelihood of sanctions for tax delinquency with respect to tax rates. Owners’ beliefs about the likelihood of sanctions for delinquency is measured in the midline survey. In panels B–J, the y-axis reports the collector-level elasticity of the message used by the tax collector with respect to the tax rate: sanctions by the chief (panel B), sanctions by the tax ministry (panel C), provision of public goods in the neighborhood (panel D) or in Kananga (panel E), showing trust in the government (panel F), the importance of paying the property tax (panel G), tax compliance as a legal obligation (panel H), social embarrassment associated with tax delinquency (panel I), and any other threats in the case of tax delinquency (panel J). We discuss these results in Section 7.2.

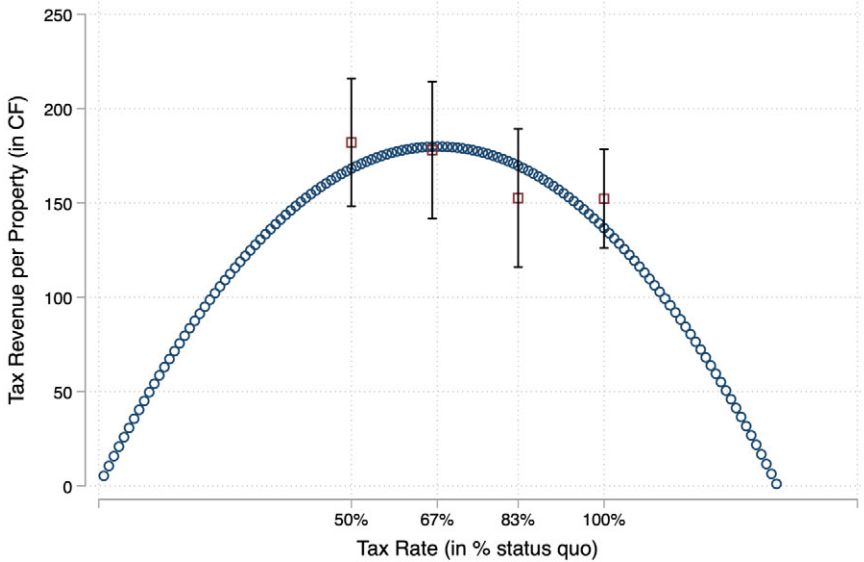


FIGURE A8.—Rates and Enforcement as Complements: Fit of the Tax Revenue vs. Tax Rates Relationship. *Notes:* This figure reports estimates of the relationship between tax rates (x-axis) and tax revenue per property owner (y-axis). The square-shaped point estimates are from equation (1), comparing property tax revenue in the tax abatement treatment groups relative to the status quo property tax rate. The solid lines show the 95% confidence interval for each of the estimates using robust standard errors. The circle-shaped point estimates are the predicted tax revenue, $T \cdot \widehat{\mathbb{P}(T, \alpha)}$, which we obtain by predicting $\mathbb{P}(T, \alpha)$ at every tax rate T using equation (6). As described in Section 7.2, we restrict the data to the 23,777 properties subject to tax collection by state tax collectors. We discuss these results in Section 7.3.

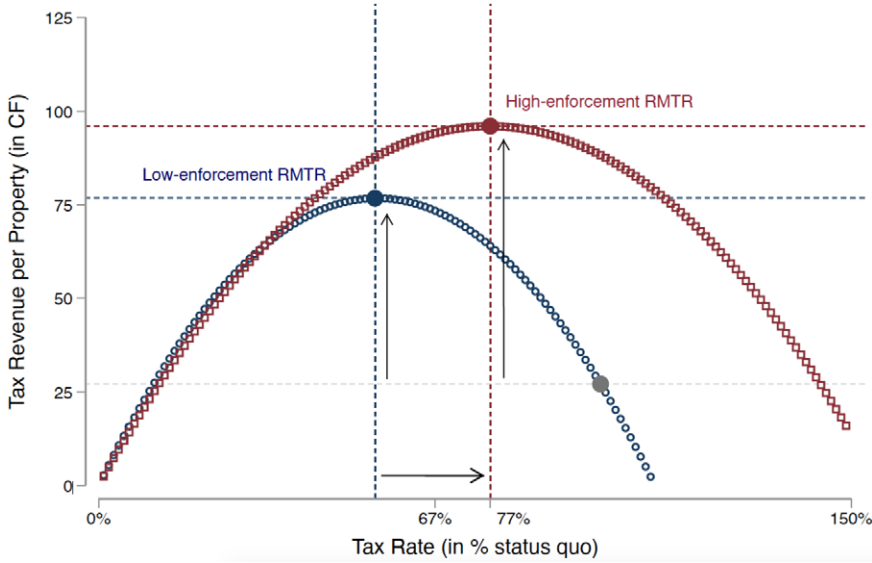


FIGURE A9.—Rates and Enforcement as Complements: Revenue Implications (Tax Letters). *Notes:* This figure reports estimates of the relationship between tax rates (x-axis) and tax revenue per property owner (y-axis). We predict tax revenue at different hypothetical tax rates using the regression coefficients obtained when estimating equation (6). We compare the estimated relationship among households assigned to the *control* message on their tax letter (curve made up of circles) to households assigned to an enforcement message (curve made up of squares). For the latter, we pool the *central enforcement* and *local enforcement* messages. Vertical lines indicate different potential tax rates, while horizontal lines indicate the corresponding revenue levels. The data are restricted to the sample of 2665 properties that were subject to randomized messages on tax letters. We discuss these results in Section 7.3.

REFERENCES

- BALAN, PABLO, AUGUSTIN BERGERON, GABRIEL TOUREK, AND JONATHAN WEIGEL (2022): “Local Elites as State Capacity: How City Chiefs Use Local Information to Increase Tax Compliance in the DR Congo,” *American Economic Review*, 112 (3), 762–797. [2,4,28]
- BEST, MICHAEL, FRANCOIS GERARD, EVAN KRESCH, JOANA NARITOMI, AND LAURA ZORATTO (2020): “Greener on the Other Side? Spatial Discontinuities in Property Tax Rates and Their Effects on Tax Morale,” Working Paper. [11]
- JIBAO, SAMUEL S., WILSON PRICHARD, AND VANESSA VAN DEN BOOGAARD (2017): “Informal Taxation in Post-Conflict Sierra Leone: Taxpayers’ Experiences and Perceptions.” [11]
- KHAN, ADNAN Q., ASIM I. KHAWAJA, AND BENJAMIN A. OLKEN (2015): “Tax Farming Redux: Experimental Evidence on Performance Pay for Tax Collectors,” *The Quarterly Journal of Economics*, 131 (1), 219–271. [8]
- LUTTMER, ERZO, AND MONICA SINGHAL (2014): “Tax Morale,” *The Journal of Economic Perspectives*, 28 (4), 149–168. [11]
- REID, OTIS, AND JONATHAN WEIGEL (2019): “Citizen Participation in Corruption: Evidence From Roadway Tolls in the Democratic Republic of the Congo,” Working Paper. [8]
- WASEEM, MAZHAR (2018): “Taxes, Informality and Income Shifting: Evidence From a Recent Pakistani Tax Reform,” *Journal of Public Economics*, 157, 41–77. [8]
- WEIGEL, JONATHAN (2020): “The Participation Dividend of Taxation: How Citizens in Congo Engage More With the State When It Tries to Tax Them,” *Quarterly Journal of Economics*. [11,13,19]

Co-editor Dave Donaldson handled this manuscript.

Manuscript received 12 July, 2021; final version accepted 27 February, 2024; available online 1 March, 2024.