

Local Elites as State Capacity: How City Chiefs Use Local Information to Increase Tax Compliance in the D.R. Congo

Pablo Balán ¹ Augustin Bergeron ¹

Gabriel Tourek ² Jonathan Weigel ³

¹Harvard University ²MIT, J-PAL ³London School of Economics

October 1, 2020

Expanding Tax Capacity in Weak States

- ▶ Fiscal capacity important for economic and political development (Besley-Persson 2009, 2013)
- ▶ But how can developing countries escape a low-tax, low-capacity trap and become “tax states”? (Schumpeter 1918)
- ▶ Fundamental decision facing governments: use **state agents** to collect taxes vs delegating to **local** elites (Levi 1988)
 - ▶ Weak states operate alongside customary elites, religious elites, economic elites, rebel groups, etc.
 - ▶ Choice of collector separate from *contract* (tax farming) — held fixed in this paper

Tradeoffs of Local Elites as Tax Collectors

Weber 1922, Levi 1988, Azabou & Nugent 1988, Stella 1993, Kiser 1994, Ertman 1997

Advantages:

1. Lower *collection costs*
2. Better *local information*: more enforcement in weak states

Disadvantages:

1. Harder to *monitor*: leakage, exploitation

Low-capacity states: often *delegate collection* to local elites

- ▶ Lower costs & better information outweigh risk of leakage
 - ▶ Employed historically (Kiser 1994) and many developing countries today (Baldwin 2015, Sanchez de la Sierra 2019)

High-capacity states: *collection by state agents*

- ▶ State agents have higher enforcement → outweighs higher costs
 - ▶ Past investments in fiscal & legal capacity (Besley & Persson 2009) and third-party info (Kleven et al 2011)
 - ▶ Common in OECD countries

Research Questions

1. Could fragile states increase tax revenues by delegating collection to local elites?
 - ▶ If so, what is the mechanism?
2. What are the consequences of local elite collection on incidence, corruption and perceptions of government legitimacy?

Related Literature

Field Experiment on State Agent v. Chief Tax Collection

2018 property tax campaign in Kananga, DRC:

- ▶ Implementation: Provincial Government of Kasai Central
- ▶ Treatments:
 1. Collection by state agents (“Central”)
 2. Collection by city chiefs (“Local”)
 3. Hybrid treatment arm to test mechanisms
- ▶ Unit of randomization: Neighborhoods (356)
 - ▶ Randomly assigned to tmts and months within 6-month campaign
 - ▶ Covers 49,921 properties citywide
- ▶ Outcomes and Data:
 - ▶ Tax compliance and revenues, distributional incidence, bribes, views of the government
 - ▶ Drawn from administrative tax records and surveys

A weak state with low formal tax compliance



- ▶ Provincial tax revenues extremely low: \approx \$0.3 per person
- ▶ First systematic property tax collection in 2016:
 - ▶ To extend tax net further, govt decided to involve chiefs in 2018

2018 door-to-door property tax collection campaign



PROVINCE DU QUÉBEC-CENTRALE Ville de Kamourague DIOCÈSE	PROVINCE DU QUÉBEC-CENTRALE Ville de Kamourague DIOCÈSE	PROVINCE DU QUÉBEC-CENTRALE Ville de Kamourague DIOCÈSE
QUILLANCE N° A8007TC0000009	QUILLANCE N° A8007TC0000009	QUILLANCE N° A8007TC0000009
PROPRIÉTAIRE : NM : Nabilou PSCOM : Nabilou PRENM : Nabilou	PROPRIÉTAIRE : NM : Nabilou PSCOM : Nabilou PRENM : Dominique	PROPRIÉTAIRE : NM : Nabilou PSCOM : Nabilou PRENM : Bruce
BIEN TAKE : IMMOBILIER	BIEN TAKE : IMMOBILIER	BIEN TAKE : IMMOBILIER
SUPERFICIE : Bâti : 0.00	SUPERFICIE : Bâti : 0.00	SUPERFICIE : Bâti : 4650.00
ADRESSE : Ville : Kamourague Canton : Kamourague Quartier : Nabilou Avenue : Lumbard 12 Numéro : 41500771	ADRESSE : Ville : Kamourague Canton : Kamourague Quartier : Taignonville Avenue : Route Kamourague 44 Numéro : 5040002	ADRESSE : Ville : Kamourague Canton : Kamourague Quartier : Melandri Avenue : Kamourague 9 Numéro : 70027711
INVEST/INVEST/TAIXANT : INVT/Financier FOI/TAIXANT : 40160600 MONTANT PERÇU : 1686.7455 CDF	INVEST/INVEST/TAIXANT : INVT/Financier FOI/TAIXANT : 40160600 MONTANT PERÇU : 1686.5 CDF	INVEST/INVEST/TAIXANT : INVT/Financier FOI/TAIXANT : 40160600 MONTANT PERÇU : 46862.0 CDF

- ▶ Two stages of door-to-door tax collection by teams of 2 collectors
 1. **Property register** of full neighborhood (no valuation roll)
 - ▶ Property owners receive a unique tax ID and a tax letter
 - ▶ Annual tax liability = fixed fee of ~\$2 or \$9 [Details](#)
 - ▶ Solicit tax and (if needed) make appointments for next tax visit
 2. **Tax solicitation:** door-to-door tax appeals
 - ▶ Collectors use handheld printers to issue receipts to payers
 - ▶ Collectors earn weekly bonus proportional to tax deposited
- ▶ **Experiment:** tax ministry agents or city chiefs assigned as collectors

“Central” and “Local” Tax Collectors

- ▶ **Central:** Agents of provincial tax ministry
 - ▶ Unsalaries contractors with tax ministry & other parts of bureaucracy
 - ▶ High performing agents may receive future salaried position
- ▶ **Local:** City chiefs
 - ▶ Locally embedded elites / leaders
 - ▶ Help resolve local disputes (e.g. over property)
 - ▶ Administer informal labor tax / local public goods provision
 - ▶ Not “customary” chiefs, but perhaps “neo-customary” (Boone 2014)
 - ▶ Common institution across urban Francophone Africa
 - ▶ Often involved in property tax collection

“Central” and “Local” Tax Collectors (2)

► **What is held constant** across treatments:

1. Training, protocol, technology (handheld receipt printers)
2. Incentives: weekly bonus proportional to tax deposited
3. Expectations about future tax collection responsibilities

► **What varies** across treatments: **type of tax collector**

1. Information? Legitimacy? Sanctioning power?
2. Demographic differences: city chiefs are older, less educated, less wealthy, more skeptical of government and taxation

Central v. Local Collector Characteristics

Characteristics & Collection Ability

Central v. Local: Tax Compliance

Estimation & Balance

	Compliance			
	(1)	(2)	(3)	(4)
Local	0.023** (0.008)	0.032*** (0.007)	0.033*** (0.007)	0.040*** (0.008)
Time FE	No	Yes	Yes	Yes
House FE	No	No	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes
Non-exempt Only	No	No	No	Yes
Observations	28872	27764	27764	23803
Clusters	221	213	213	213
Central Mean	.068	.063	.063	.073

Rug Plot

Time Trend

- ▶ Local ↑ tax compliance by 51%, revenues by 43%
- ▶ Benchmarking magnitude: 5x's > standard enforcement messages on tax letters

Revenue Results

Enforcement Messages

Are There Other Downsides to Chief Collection?

Secondary Reduced-Form Results

Compared to Central, chief tax collection caused:

1. **Bribes:** 2 ppt increase (from 1% to 3% of HHs) Measurement Results
2. **Views of gov:** no backfiring; in fact \uparrow trust in gov Measurement Results
3. **Other margins:** Null or positive effects
 - ▶ Assessment: more accurate, more exemptions Results
 - ▶ Fiscal externalities: \uparrow compl. w/ other taxes, morale Morale Other Taxes
 - ▶ Informal labor taxes (salongo): no differences Measurement Results
 - ▶ Ethnic favoritism: no differences Results

Why Do Chiefs Collect More Taxes?


1. More **tax visits** b/c they live in neighborhood
2. Better **targeting** of visits b/c of local information
3. Better at **persuading** households to pay conditional on visits

Mechanism 1: More Tax Visits

- ▶ Less costly to make tax visits b/c chiefs live in neighborhood
 - ▶ Could \uparrow compliance if time-varying liquidity constraints bind
 - ▶ Or, if repeated visits \uparrow perceptions of enforcement
- ▶ **Test:** Measure differences between Central and Local taxation in reported visits by collectors Visits Results
 - ▶ No significant differences along extensive or intensive margin
 - ▶ No evidence of more unofficial discussions outside of tax visits in Local Contact Results

Mechanism 2: Targeting

► **Intuition:**

- Chiefs receive better signal about payment propensities of households
- Chiefs better target follow-up tax solicitation visits (conditional on total number of visits) 

► **Test:** sharing chiefs' information about HHs' payment propensities with Central collectors should increase compliance

- “Central Plus Local Information” (CLI) treatment arm:
 - After registration, state agent collectors meet with city chief
 - Discuss ability and willingness to pay of each property owner on tax roll
 - CLI collectors collect taxes in the neighborhood

Consultation with Chief



Central < CLI < Local

	Compliance	Revenues	Visited	Visits	Compliance	Compliance
	(1)	(2)	(3)	(4)	(5)	(6)
Central Plus Local Info	0.024** (0.009)	48.325** (21.466)	-0.016 (0.028)	-0.026 (0.044)	0.026* (0.014)	0.022** (0.009)
Local						0.046*** (0.007)
Visit Control	No	No	No	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
House FE	Yes	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20636	20636	13884	13877	5283	33746
Clusters	165	165	163	163	161	267
Central Mean	.051	152.399	.387	.497	.097	.052
Test CLI=Local (p -value)						0.007

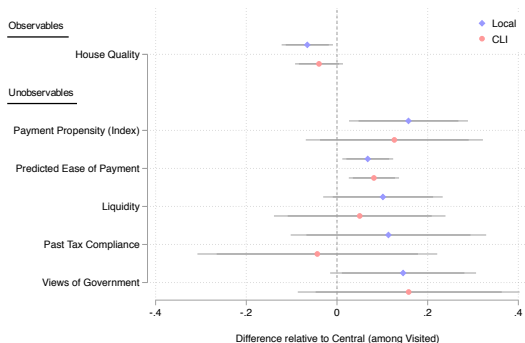
Rug Plot

Time Trend

- ▶ CLI > Central in compliance and revenues, and conditional on visits
- ▶ Does not recover gap with Local

Characteristics of Households Visited Post-Registration

- ▶ CLI collectors more likely to visit and collect at properties chiefs recommend **Correlations**
- ▶ Of what does local info consist?



- ▶ Chief and CLI collectors rely less on observables (house quality)
- ▶ Target more on unobservables: liquidity, views of govt, payment propensity **By HQ**
 - ▶ Chiefs retain advantage in targeting by liquidity **Results**

Mechanism 3: Persuasion

- ▶ City chiefs might be better able to persuade taxpayers to pay, conditional on having visited them.
 1. Activate tax morale through trust or service provision (Luttmer & Singhal 2014)
 2. Greater sanctioning power through local means (Allingham & Sandmo 1972)
- ▶ **Test 1:** Collection during property registration
 - ▶ Linear, property-by-property pattern (confirmed by GPS) neutralizes chief's ability to target HHs using local information
 - ▶ No differences Results
- ▶ **Test 2:** HTE by baseline chief characteristics
 - ▶ Including: trust in chief, service provision, sanctioning power, remoteness Trust by Remoteness
 - ▶ No heterogeneity Results

Concluding thoughts

▶ **Treatment effects:**

- ▶ Chief collection **increases revenues by 43%**
- ▶ Increases bribes, but not other mismanagement margins
- ▶ No erosion of attitudes towards govt

▶ **Mechanism:** Chiefs better at targeting HHs with high payment propensity using local information

▶ **Distributional impacts:** Chiefs bring lower-value properties with liquidity into tax net

- ▶ No differences in income/liquidity among taxpayers Measurement Results

▶ **Policy implications:**

- ▶ Return on \$1 in tax administration cost increases by 53% CE
- ▶ Chief collection a viable short-run option in low-capacity settings

Thank you!

gztourek@mit.edu

Types of tax collection by local elites [Back](#)

1. Tax farming

- ▶ Local elites bids for right to become residual claimant
- ▶ Used for indirect taxes (customs, sales, excise)

2. Decentralized collection (delegation)

- ▶ Local elites receive salary or status in exchange for collection
- ▶ Used for direct taxes (land tax)

▶ Why this difference? (Kiser 1994)

1. Ease of detecting corruption

- ▶ Indirect taxes more unpredictable than direct
- ▶ Base of indirect taxes mobile, unlike direct
- ▶ Thus, indirect taxes hard to monitor & big scope for collusion
- High-powered tax farmer contract optimal for indirect taxes

2. Damage of overtaxation

- ▶ Clear risk of over-zealous taxation with tax farming
- ▶ Would be more destructive for land taxes

1. Tradeoff between state tax collectors and local elites

- ▶ Theoretical work across social sciences (Levi 1989; Kiser 1994; Ertman 1997; Azabou and Nugent 1998)

2. Role of local elites in governance and development

- ▶ Politics (Acemoglu et al. 2014; Anderson et al. 2015; Baldwin 2015)
- ▶ Land governance (Goldstein and Udry 2008; Honig 2017)
- ▶ Development programs (Basurto et al. 2017; Alatas et al. 2019)

3. Taxation in developing countries

- ▶ Tax design w/ low enforcement capacity (Besley & Persson 2013; Khan et al 2015; Best et al 2015; Bachas et al 2019)
- ▶ Information as key input to tax compliance (Kleven et al. 2011; Pomeranz 2015; Jensen 2019; Naritomi 2019; Okunogbe 2019)

4. Bureaucrat performance and social embeddedness

- ▶ Bureaucrats in home region (Bertrand et al 2020; Chu et al 2020)
- ▶ Social networks and program delivery (Bandiera et al 2020)

Similar property tax schemes in other countries [Back](#)

Franzsen and McCluskey 2017

- ▶ Common in developed countries until recently:
 - ▶ *United Kingdom*: Introduced a flat charge (the Community Charge or "Poll Tax") between 1989 and 1993.
 - ▶ *Republic of Ireland*: Property owners had to pay a flat rate charge (Household Charge and Residence Charge) until the implementation of the local property tax in 2013.
- ▶ Still common in developing countries:
 - ▶ *India*: Major Indian cities (e.g. New Delhi, Bangalore, Kolkata) have adopted flat rates by unit-area category in 2008.
 - ▶ *Tanzania*: All properties that are not included on the valuation roll are liable for flat rates.
 - ▶ *Sierra Leone, Liberia and Malawi*: Overall tax simplification agenda implies piloting flat rates for properties not on the valuation roll.

Property Tax Details

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- ▶ Fixed annual fee – common in LICs w/o valuation roll [Examples](#)

- ▶ Low-value band (90% of properties): 3,000 FC \approx \$2
- ▶ High-value band (10% of properties): 13,200 FC \approx \$9

- ▶ Rate: \approx 0.32% of property value (US 0.27% – 2.35%) [ML approach](#)



Low-value band property

Tax liability: \approx \$2

Property value: \$1,000



High-value band property

Tax liability: \approx \$9

Property value: \$8,134

Predicting Property Values using Machine Learning [Back](#)

Estimating the value of every property in Kananga:

► Supervised Machine Learning:

- Y_i = label = property value
 - X_i = set of features
- Predict $\mathbb{E}[Y_i | X_i = x]$

► Training Sample:

Value of 1,500 properties

- Step 1: visit by land surveyor
- Step 2: estimate value of property replacement





‘Periphery’ Property

Property value: **\$1,000**



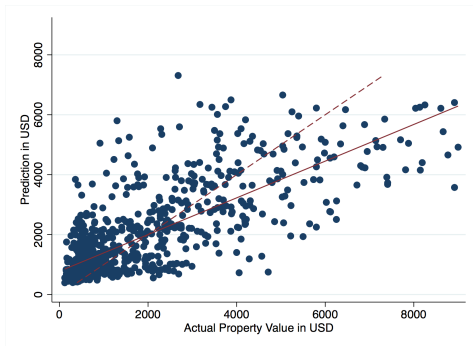
‘Midrange’ Property

Property value: **\$8,134**

Performance of the ML Algorithm [Back](#)

Best performance algorithm is LightGBM: **Gradient boosting model**, uses tree-based learning

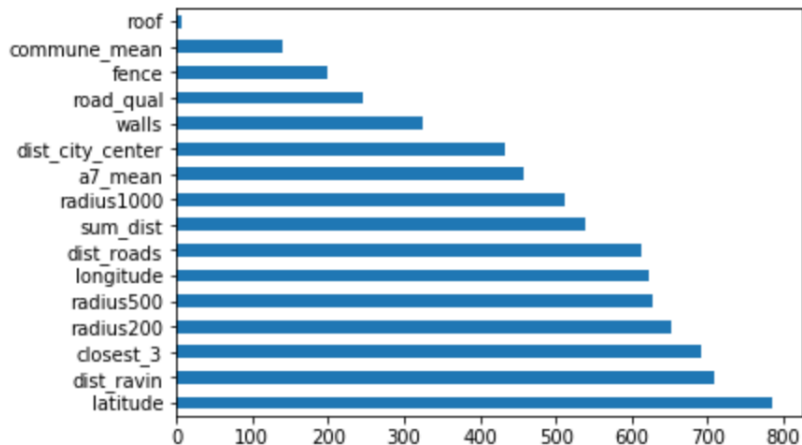
- ▶ Include 15 most important property and nbhd features
→ avoid **overfitting**
- ▶ MAPE using 10-fold cross-validation
→ 42% OOS **accuracy**
- ▶ Work in progress (70%):
Ongoing data collection



Accuracy of all Trained Algorithms [Back](#)

Model	Accuracy (MAPE)
Ridge	142 %
SVR - Linear Kernel	120 %
SVR - RBF Kernel	83 %
KNN	167 %
Random Forest	99 %
Boosting - LGBM (MAPE loss)	58 %
Boosting - LGBM (MAPE and APE loss)	42 %

Feature Importance [Back](#)



Property Tax Collection in Kananga

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- ▶ Door-to-door property **tax collection** is new:
 - ▶ Before 2016, less than 5% ever reported paying property tax
 - ▶ First door-to-door collection in 2016 (Weigel 2019) but...
 - ▶ ≤ 10 % of owners paid despite collector visits
- ▶ Low level of property **tax enforcement**:
 - ▶ In theory: fine for evasion = $2.5 \times$ liability (to pay within 30 days), o/w case goes to court
 - ▶ In practice: sanctions rarely pursued for avg taxpayers

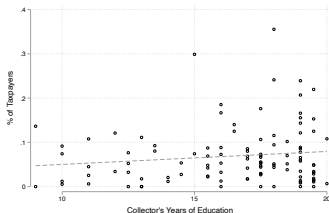
Central and Local Collectors [Back](#)

Variable	(1) DGRKOC collectors	(2) Chief Collectors	(3) Difference
Age	30.706 (8.056)	58.874 (11.064)	28.168*** (1.729)
% Female	0.059 (0.238)	0.045 (0.208)	-0.014 (0.037)
Born in Kananga	0.510 (0.505)	0.598 (0.493)	0.088 (0.084)
Log Monthly Income	4.214 (0.960)	4.042 (1.153)	-0.172 (0.187)
Number of Possessions	1.784 (1.316)	0.628 (1.166)	-1.156*** (0.205)
Education years	17.000 (3.406)	13.248 (3.483)	-3.752*** (0.587)
Test Maths (Mean)	0.745 (0.232)	0.739 (0.257)	-0.006 (0.042)
Reading Ability (Mean)	1.740 (0.581)	1.847 (0.775)	0.107 (0.122)
Trust in Gov. (Mean)	3.033 (0.722)	2.735 (1.050)	-0.298* (0.163)
Prov. Gov. Capacity (Mean)	147.263 (76.065)	159.326 (98.907)	12.063 (15.598)
Tax Min. Important	3.667 (0.653)	3.142 (0.766)	-0.525*** (0.124)
Taxes Important	3.667 (0.683)	3.204 (0.696)	-0.463*** (0.117)
Poor Priority (Mean)	2.693 (0.557)	2.755 (0.586)	0.062 (0.097)
Progressiveness (Mean)	2.580 (0.292)	2.469 (0.309)	-0.112** (0.051)
Observations	51	113	164

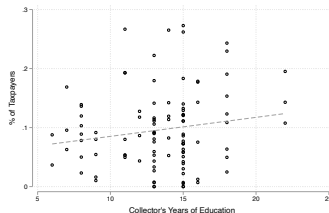
Collector characteristics and collection ability

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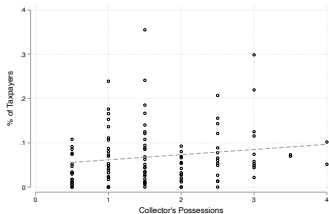
Central Collectors: Education



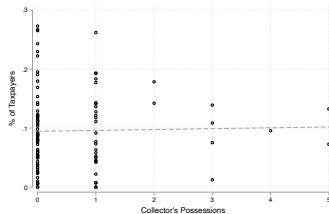
Local Collectors: Education



Central Collectors: Wealth



Local Collectors: Wealth



We estimate the following regression:

$$y_{ins} = \beta_0 + \beta Local_{ns} + \alpha_s + \mathbf{X}_{ins}\Gamma + \varepsilon_{ins}$$

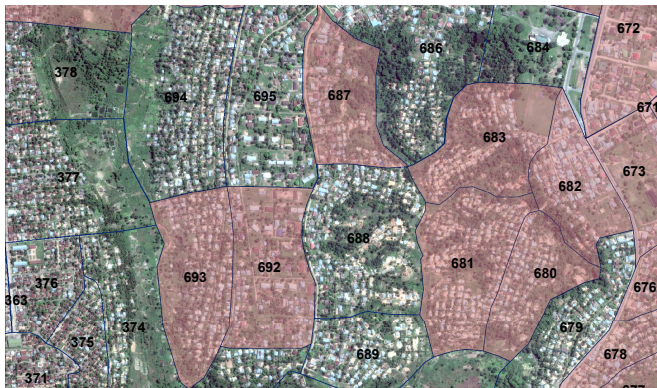
- ▶ y_{ins} outcome for individual i in neighborhood n in stratum s
- ▶ $Local_{ns}$ indicator for being assigned to Local tax collection (control group is Central collection)
- ▶ α_s strata fixed effects
- ▶ \mathbf{X}_{ins} controls (house, time period fixed effects)
- ▶ SEs clustered by neighborhood (356 total)

- ▶ Randomization balanced across treatments for demographic and economic characteristics of property owner and neighborhood

Randomizing who collects taxes on the neighborhood level

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- ▶ 356 neighborhoods randomly assigned to tax collection arms, stratifying on
 1. Location in city
 2. Treatment status in 2016 campaign (Weigel 2019)
 3. Local chief's past experience collecting taxes



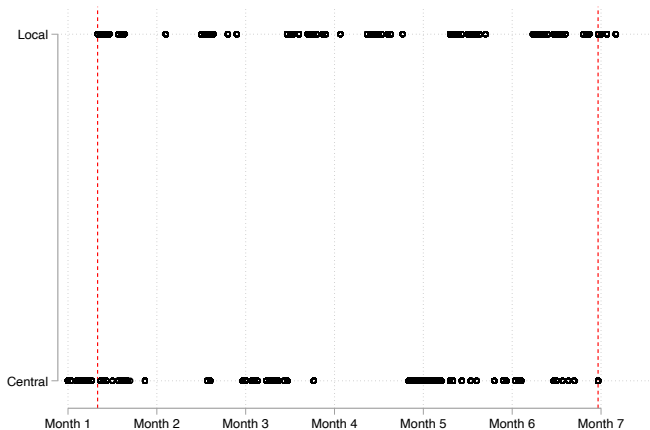
Random assignment of neighborhoods [Back](#)

	Treatments				
	Control	Central	Local	CLI	CXL
Neighborhoods	110	111	80	50	5
Properties	14,489	14,383	9,422	6,071	797

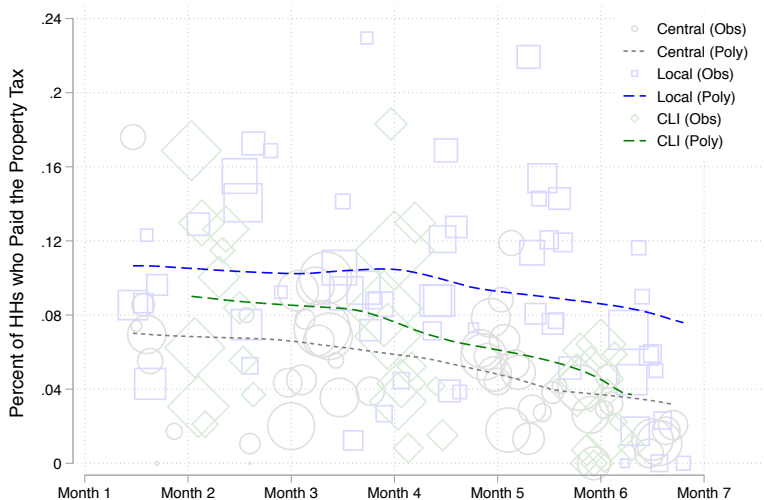
Randomization balance [Back](#)

	N (1)	Central Mean (2)	Local (3)	CL1 (4)	CXL (5)
<i>Panel A: Property Owner Characteristics</i>					
Years of Education ^R	3614	10.56	-0.07 (0.24)	-0.03 (0.27)	-0.60* (0.32)
Electricity ^B	3627	0.13	0.01 (0.01)	0.002 (0.02)	0.02 (0.02)
Log HH Monthly Income ^B	3594	10.53	0.07 (0.16)	-0.07 (0.19)	-0.21 (0.25)
Trust of Chief ^B	3613	3.07	0.05 (0.06)	0.10 (0.07)	0.19 (0.08)
Trust of National Government ^B	3436	2.51	0.04 (0.06)	-0.0004 (0.07)	0.02 (0.09)
Trust Provincial Government ^B	3459	2.41	0.08 (0.06)	0.04 (0.07)	-0.0005 (0.08)
Trust of Tax Ministry ^B	3423	2.36	0.04 (0.06)	-0.02 (0.07)	-0.07 (0.08)
Sex ^M	22221	0.77	0.01 (0.01)	0.001 (0.01)	-0.01 (0.01)
Age ^M	19874	54.35	0.45 (0.48)	0.12 (0.59)	0.56 (0.64)
Majority Tribe ^M	22625	0.77	0.02 (0.02)	0.002 (0.01)	0.02 (0.02)
Employed ^M	24298	0.74	0.01 (0.01)	0.003 (0.01)	-0.01 (0.02)
Salaried ^M	24299	0.25	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Works for Government ^M	24299	0.15	0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)
Relative Works for Government ^M	26996	0.23	0.003 (0.01)	0.02 (0.01)	0.01 (0.02)
<i>Panel B: Property Characteristics</i>					
House Quality ^M	28362	0.004	-0.01 (0.10)	0.14 (0.09)	-0.07 (0.11)
Distance to State Buildings and City Center ^R	44087	1.5	0.06 (0.05)	-0.001 (0.06)	0.04 (0.07)
Distance to Health Institutions ^R	44087	0.33	0.02 (0.02)	0.04 (0.02)	0.004 (0.03)
Distance to Education Institutions ^R	44087	0.65	0.03 (0.03)	0.04 (0.04)	0.01 (0.04)
Distance to Roads ^R	43468	0.41	0.03 (0.04)	-0.02 (0.05)	0.04 (0.06)
Distance to Eroded Areas ^R	43468	0.12	0.002 (0.01)	0.01 (0.01)	0.03 (0.01)
<i>Panel C: Neighborhood Characteristics</i>					
Per Capita Property Tax Revenues in 2016 ^B	351	145.37	25.88 (39.36)	-34.28 (40.84)	-32.83 (39.66)
Affected by Conflict in 2017 ^B	351	0.02	0.01 (0.02)	0.003 (0.02)	0.04 (0.03)
<i>Panel D: Attrition</i>					
Baseline to Endline	4,186	0.1	-0.02 (0.01)	-0.02 (0.01)	-0.04*** (0.01)

Rug Plot: Central v. Local

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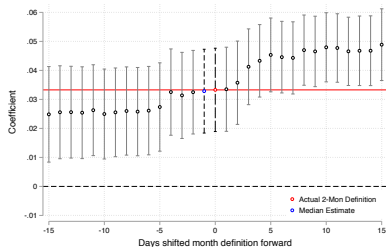
Central vs. Local vs. CLI: Tax Compliance

[Back \(CvL\)](#)[Back \(CvCLI\)](#)

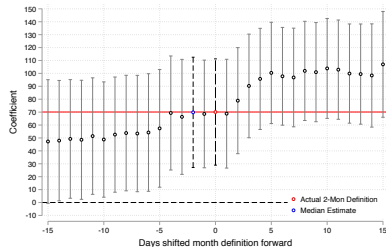
Robustness to Shifting Time Period Fixed Effect Start Date (Central v. Local)

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A. Compliance



B. Revenues



Robustness Tax Outcomes — Central vs. Local [Back](#)

	No Adjustment (1)	Two Month Fixed Effects (2)	Shift Median Two Month Fixed Effects (3)	Interaction Weighted Estimator (4)	One Month Fixed Effects (5)	Time Restriction (6)	Coarsened Exact Matching (7)
<i>Panel A: Compliance</i>							
Local	0.023** (0.008)	0.033*** (0.007)	0.033*** (0.007)	0.031*** (0.007)	0.032*** (0.007)	0.042*** (0.007)	0.032*** (0.008)
Observations	28872	27764	27506	37186	28872	25912	26637
Clusters	221	213	211	221	221	199	203
Central Mean	.068	.063	.064	.063	.068	.053	.068
<i>Panel B: Revenues</i>							
Local	46.042* (23.401)	70.090*** (20.995)	69.822** (21.783)	73.932*** (18.593)	69.296** (22.186)	92.235*** (20.358)	78.782** (31.044)
Observations	28872	27370	27664	36792	28872	25912	26637
Clusters	221	210	212	221	221	199	203
Central Mean	195.583	186.837	187.922	186.837	195.583	160.598	195.583
One Month FE	No	No	No	No	Yes	No	No
Two Month FE	No	Yes	Yes	Yes	No	No	No
House FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Central v. Local: Tax Revenues

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	Revenues			
	(1)	(2)	(3)	(4)
Local	57.215** (25.939)	79.870*** (23.063)	69.177** (20.849)	82.384*** (23.889)
Time FE	No	Yes	Yes	Yes
House FE	No	No	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes
Non-exempt Only	No	No	No	Yes
Observations	28872	27764	27764	23803
Clusters	221	213	213	213
Mean	195.583	184.65	184.65	211.361

Benchmark: Flier Messages

[Back \(Results\)](#)
[Back \(Persuasion\)](#)

	Tax Compliance			Tax Revenue (in CF)		
	(1)	(2)	(3)	(4)	(5)	(6)
Local	0.036*** (0.008)			109.100*** (31.221)		
Central Deterrence		0.013* (0.007)	0.014* (0.007)		42.715 (25.976)	43.394* (25.720)
Local Deterrence		0.010 (0.007)	0.012* (0.007)		15.667 (20.512)	19.689 (20.355)
Central Public Goods		0.005 (0.007)	0.005 (0.007)		8.885 (20.910)	8.546 (20.487)
Local Public Goods		0.006 (0.007)	0.008 (0.007)		30.113 (25.280)	34.374 (24.853)
Trust		0.010 (0.007)	0.011 (0.007)		29.848 (23.055)	32.267 (22.938)
Observations	4783	6796	6796	4783	6796	6796
Mean	.012	.024	.024	30.326	59.64	59.64
House FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	No	No	Yes	No	No
Strata FE	Yes	No	No	Yes	No	No
Neighborhood FE	No	No	Yes	No	No	Yes

Distributional Impacts of Local Elite Collectors [Back](#)

- ▶ What is the de facto **incidence** of the tax when collected by chiefs (relative to central collectors)?
 1. Taxation by local elites might be **regressive**: informal taxation typically found to be regressive (Olken and Singhal 2011)
 2. Taxation by local elites might be **progressive**: local information allows progressivity in enforcement
- ▶ Measurement:
 - ▶ House quality:
 - ▶ Index of house characteristics
 - ▶ Household income and liquidity:
 - ▶ Estimates from household surveys

Central v. Local: Distribution of Tax Burden [Back](#)

<i>Outcome:</i>	Compliance by Prop. Type		Complier Characteristics		
	Low Band Prop. (1)	High Band Prop. (2)	House Quality (3)	Avg. Mon. Income (4)	Liquidity Index (5)
Local	0.037*** (0.008)	0.002 (0.013)	-0.148** (0.057)	0.002 (0.042)	-0.063 (0.167)
Time FE	Yes	Yes	Yes	Yes	Yes
House FE	No	No	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes
Observations	24581	3384	1324	228	228
Clusters	208	150	157	121	121
Central Mean	.063	.062	.102	.007	.118

- ▶ Chiefs bring **lower-value band** properties into the tax net
 - ▶ Shifts average incidence toward relatively lower quality properties
- ▶ But, no difference in terms of HH **income / liquidity**

Exemption and Assessment Results [Back](#)

<i>Dependent variable</i>	$\hat{\beta}$	SE	R^2	N	$\bar{x}_{Central}$
Assigned Exemption	0.039*	0.021	0.055	13772	0.266
Incorrect Exemption	0.012	0.007	0.020	13771	0.044
Assigned High Band	0.030	0.021	0.230	27764	0.114
Incorrect Assignment	-0.013**	0.006	0.041	27764	0.031

► Midline survey measures

1. *Paid Bribe*: “Did you (or a family member) pay the ‘transport’ of the tax collectors? If so, how much?”
2. *Gap Self v. Admin*: $\mathbb{1}[\text{self-report}=1, \text{admin}=0]$
 - Advantage: large sample
 - Disadvantage: short survey, less trust b/w enum and respondent

► Endline survey measures

1. *Paid Bribe*: [same as above]
2. *Other Payments*: “Now, I’d like to talk about small payments made to government officials such as small amounts paid for transport, water, tea, etc. In the past 6 months, did you make any such payment?”
 - Advantage: trust b/w enum and respondent; captures bribes paid outside of property tax campaign
 - Disadvantage: smaller sample

Central v. Local: Bribes

[Back](#)

<i>Dependent variable</i>	$\hat{\beta}$	SE	R^2	N	$\bar{x}_{Central}$
Paid Bribe (Midline)	-0.001	0.003	0.007	18596	0.016
Gap Self v. Admin (Midline)	0.016*	0.009	0.018	14309	0.077
Paid Bribe (Endline)	0.018*	0.009	0.049	1169	0.014
Other Payments (Endline)	0.031**	0.014	0.041	2407	0.094

Measuring Informal Labor Tax Participation [Back](#)

- ▶ In developing countries, 20% of households make informal tax payments and it represents 16% of total taxes paid by households (Olken and Singhal 2011)
- ▶ Our context: *Salongo*, a local public goods institution organized by the chief to which households contribute labor (Mean = 38%)
- ▶ Questions:
 1. *Did someone from your household participate in Salongo in the past two weeks?*
 2. *For how many hours did they participate in Salongo?*

Central v. Local: Other Taxes [Back](#)

<i>Dependent variable</i>	$\hat{\beta}$	SE	R^2	N	$\bar{x}_{Central}$
<i><u>Panel A: Informal Labor Taxes</u></i>					
Salongo Extensive (Midline)	-0.031	0.032	0.057	13952	0.376
Salongo Intensive (Midline)	-0.240	0.247	0.025	13568	1.659
Salongo Extensive (Endline)	0.005	0.028	0.063	2413	0.404
Salongo Intensive (Endline)	0.459	0.445	0.051	2358	3.996
<i><u>Panel B: Other Formal Taxes</u></i>					
Vehicle Tax	0.013	0.008	0.049	2405	0.031
Market Vendor Fee	0.057***	0.017	0.046	2409	0.128
Business Tax	0.008	0.010	0.044	2409	0.043
Income Tax	0.037***	0.014	0.031	2406	0.095
Obsolete Tax	0.003	0.005	0.025	2387	0.014

Measuring attitudes about the govt & chief [Back](#)

▶ Trust

- ▶ *Could you tell me how much confidence you have in the [national government / provincial government / tax ministry / chief]: a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?*

▶ Performance

- ▶ *Overall, how would you rate the performance of the [chief / provincial govt / tax ministry]?*
- ▶ *To what degree does the [provincial govt / chief] respond to the needs of your avenue's inhabitants?*
- ▶ *To what degree do you think the work done by the chief is important for the development of your quartier and Kananga in general?*

Central v. Local: attitudes about govt and chief [Back](#)

<i>Dependent variable</i>	$\hat{\beta}$	SE	R^2	N	$\bar{x}_{Central}$
View of government (index)	0.023	0.049	0.100	2411	0.011
Trust in government	0.127**	0.057	0.075	2286	0.028
Responsiveness of government	-0.049	0.045	0.099	2282	0
Performance of government	-0.060	0.052	0.060	2179	-0.014
Integrity of government	0.043	0.047	0.058	2313	0.016

► Fairness of tax collection

- *In your opinion, how fair is it that households in your neighborhood must pay the property tax?*
- *In your opinion, how fair was the amount demanded for the property tax in 2018?*
- *In your opinion, how fair were the collectors who worked on the property tax campaign of 2018?*

► Importance of paying taxes

- *In your opinion, how obligatory is it that all households in your neighborhood pay the property tax?*
- *Which of these two statements is closest to your own view? (a) Citizens should always pay their taxes, even if they disagree with the government or its actions. (b) Citizens should only pay their taxes if they agree with the government or its actions.*
- *In your opinion, how important is the property tax for the development of your neighborhood and Kananga in general?*

Central v. Local: attitudes about taxation [Back](#)

<i>Dependent variable</i>	$\hat{\beta}$	SE	R^2	N	$\bar{x}_{Central}$
Perceived tax compliance on avenue	0.100*	0.055	0.073	1851	0.026
Trust in tax ministry	0.085	0.061	0.073	2259	0.025
Property tax morale	0.075	0.047	0.057	2343	0.014
Fairness of property taxation	-0.004	0.053	0.046	2407	0.003
Perception of enforcement	-0.019	0.058	0.070	2379	0.015

Central vs. Local: Visits and Compliance by Coethnicity

[Back](#)

	Visited Post-Registration			Compliance		
Match with Collector	Tribe (1)	Subtribe (2)	Lang. Maj. (3)	Tribe (4)	Subtribe (5)	Lang. Maj. (6)
Local	-0.002 (0.031)	0.063 (0.044)	-0.016 (0.039)	0.050*** (0.011)	0.026 (0.019)	0.049** (0.017)
Local X Match	0.007 (0.040)	-0.117** (0.058)	0.020 (0.045)	-0.015 (0.016)	-0.035 (0.044)	-0.003 (0.019)
Match	-0.010 (0.035)	0.143** (0.054)	-0.004 (0.035)	0.011 (0.013)	0.051 (0.041)	-0.009 (0.012)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
House FE	Yes	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13628	6457	13628	13752	6491	13752
Clusters	210	114	210	210	114	210
Central Mean (Non-Match)	.438	.297	.432	.072	.052	.074

Visits: extensive and intensive margin [Back](#)

	Visited by Collector	Number of Visits by Collector	Other Contact with Collector	Instances of Other Contact
	(1)	(2)	(3)	(4)
Local	-0.007 (0.026)	0.017 (0.046)	0.008 (0.007)	0.019 (0.012)
Time FE	Yes	Yes	Yes	Yes
House FE	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes
Observations	18265	18254	3533	3533
Clusters	209	209	206	206
Mean	.417	.553	.025	.039

Targeting mechanism in detail

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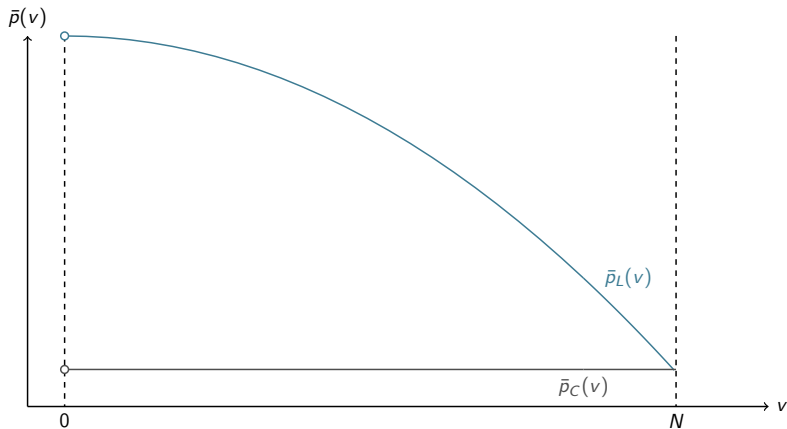
► Households:

- Heterogeneous in their intrinsic WTP λ_i
- Pay if above some threshold

► Collectors:

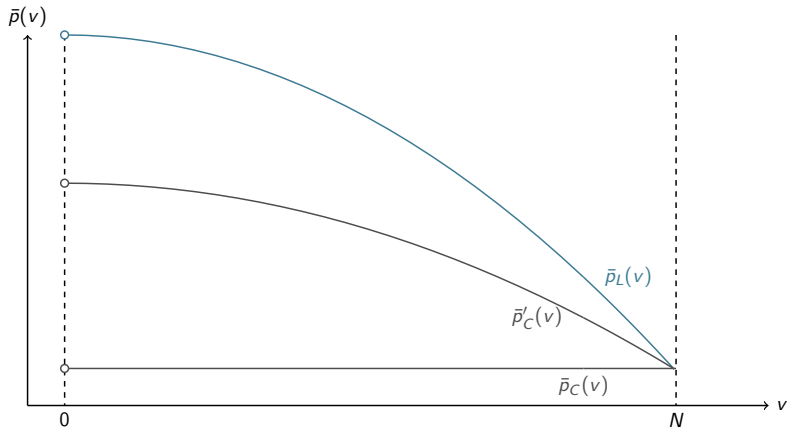
- Choose number of households to visit $v \in (0, N)$
- Receive share δ of taxes collected
- Face convex costs of visits $\frac{v^2}{2}$
- Rank order HHs by signal about λ_i , Local has better signal
- Compliance is a function of the number of HHs visited $\bar{p}_k(v)$, where $k \in \{C, L\}$ indicates Central or Local collectors

Targeting mechanism in detail

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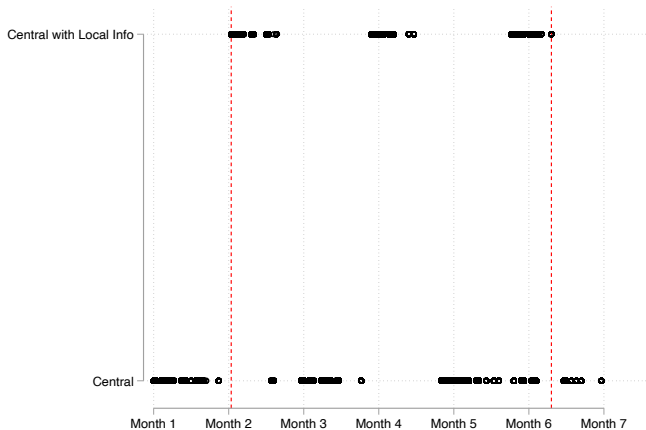
Notes: Curves $\bar{p}_L(v)$ and $\bar{p}_C(v)$ are the average probability of payment among visited property owners for Local and Central, respectively.

Targeting mechanism in detail

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Notes: Curves $\bar{p}_L(v)$, $\bar{p}_C(v)$, and $\bar{p}'_C(v)$ are the average probability of payment among visited property owners for Local, Central, and Informed Central, respectively.

Rug Plot: Central v. CLI

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Collectors More Likely to Visit and Collect from Recommended Properties

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	Visited (1)	Compliance (2)	Visited (3)	Compliance (4)
Ease of payment	0.045*** (0.012)	0.056*** (0.007)		
Willingness to pay			0.034** (0.011)	0.037*** (0.007)
Stratum FE	Yes	Yes	Yes	Yes
House FE	Yes	Yes	Yes	Yes
Observations	5623	8214	3981	5596
Clusters	79	80	50	50
Outcome Mean	.375	.072	.356	.062

Local v. Central collectors working near their homes

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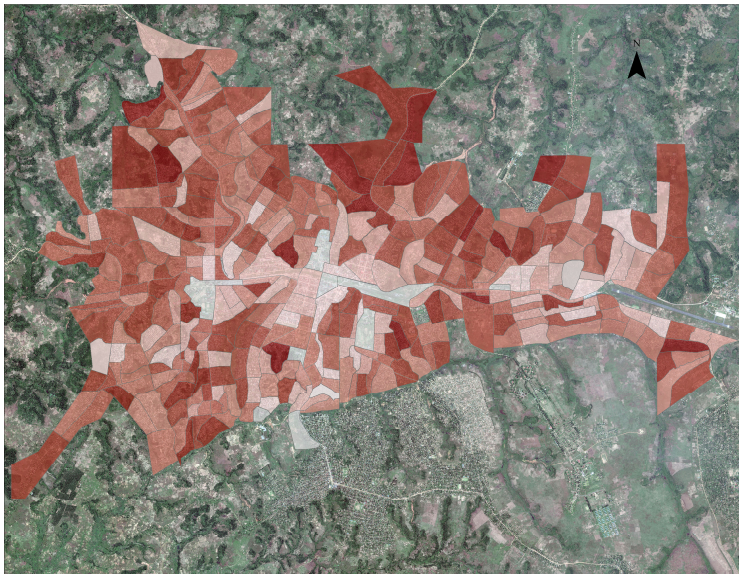
	State Collectors Working Near Home		State Collectors Working Far from Home	
	Compliance (1)	Revenue (in CF) (2)	Compliance (3)	Revenue (in CF) (4)
<i>Panel A: Chiefs v. State Collectors in Central</i>				
Local	0.027** (0.012)	62.778* (32.068)	0.034*** (0.009)	67.428*** (24.820)
Observations	17225	17225	24635	24635
Clusters	142	142	199	199
Central Mean	.069	205.113	.062	178.575
<i>Panel B: Chiefs v. State Collectors in Central and CLI</i>				
Local	0.031** (0.013)	73.889** (34.000)	0.038*** (0.007)	86.861*** (18.853)
Observations	17448	17448	28874	28874
Clusters	153	153	237	237
Central Mean	.055	181.043	.051	143.221
Time FE	Yes	Yes	Yes	Yes
House FE	Yes	Yes	Yes	Yes
Strata FE	No	No	No	No

Collection during cartography for register [Back](#)

- ▶ Central and Local collectors instructed to solicit property tax during construction of property registry
- ▶ House-by-house registration: neutralizes benefit of chief's information
- ▶ **Test:** If Local achieves higher compliance b/c of information, expect no difference in **tax collection during property registration**

	Taxes Paid During Registration Visit		
	(1)	(2)	(3)
Local	-0.001 (0.002)	-0.001 (0.002)	0.000 (0.002)
Observations	25198	21944	3254
House	Pooled	Periphery	Midrange
Polygons	221	221	221
Central Mean	.007	.008	.004

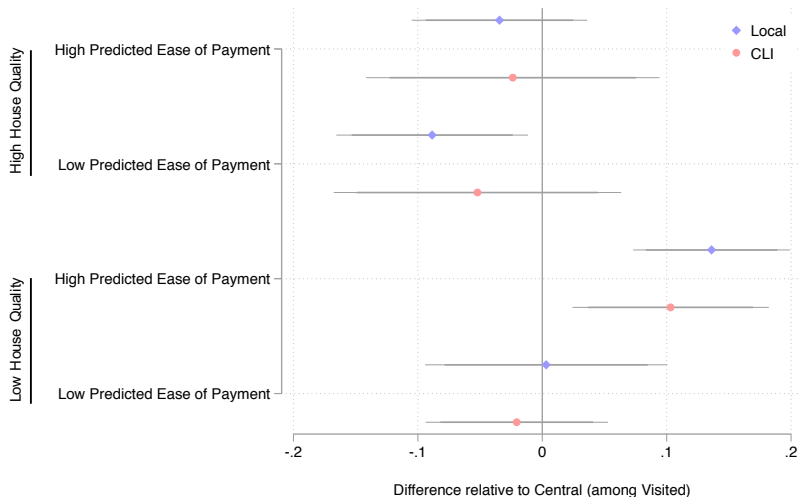
Trust in City Chief by Neighborhood

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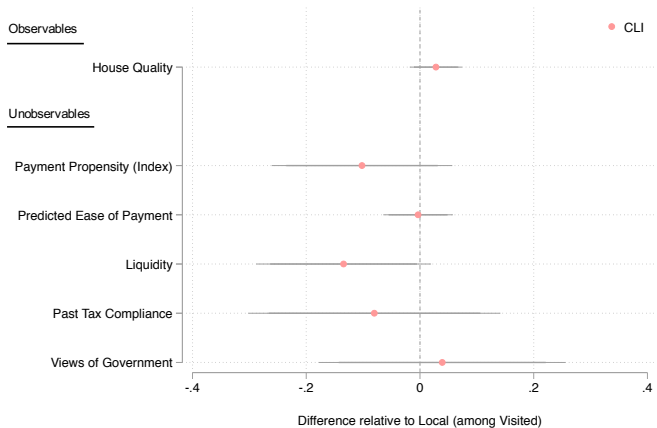
Heterogeneity by Baseline Chief Characteristics [Back](#)

<i>Baseline Chief Characteristic:</i>	Tax Compliance				
	Evaluation (Index > Median) (1)	Embeddedness (Index > Median) (2)	Activity (Index > Median) (3)	Remoteness (Index > Median) (4)	Chefferie Indicator (5)
Local	0.033*** (0.009)	0.023** (0.011)	0.023** (0.009)	0.026** (0.010)	0.041*** (0.007)
Local X Chief Characteristic	-0.001 (0.014)	0.019 (0.016)	0.028* (0.016)	0.011 (0.015)	-0.043 (0.026)
Chief Characteristic	0.014 (0.011)	0.006 (0.013)	0.015 (0.012)	-0.011 (0.013)	0.024 (0.025)
Time FE	Yes	Yes	Yes	Yes	Yes
House FE	Yes	Yes	Yes	Yes	Yes
Stratum FE	Yes	Yes	Yes	Yes	Yes
Observations	27764	27764	27764	27028	27764
Clusters	213	213	213	212	213
Central Mean (Char. Low Value)	.056	.062	.057	.069	.061

Households visited by predicted ease of payment and house quality

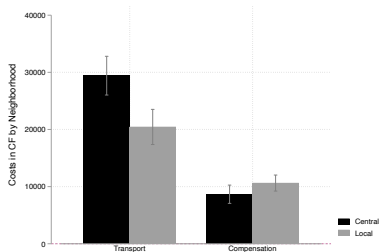
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Local vs. CLI Targeting

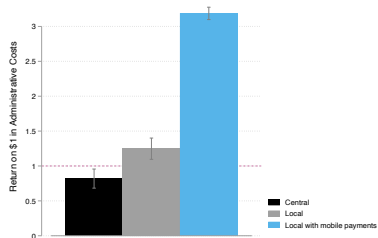
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- ▶ In low-compliance, low-capacity settings, a key question is whether it's **worth investing resource in taxation** in the first place
 - ▶ Use **costs data** from the Provincial government:
 - ▶ Tax collector's transportation costs
 - ▶ Tax collector's bonus
1. **Cost-effectiveness** of **Local** and **Central** collection :
- ▶ Return for the govt to \$1 spent on property tax collection.

Central v. Local: Costs and Cost-effectiveness

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(a) Marginal admin costs



(b) Return on \$1 in admin costs

Bribe Multiplier

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	Central			Local			Bribe Multiplier (7)
	Revenues (1)	Costs (2)	Bribes (3)	Revenues (4)	Costs (5)	Bribes (6)	
Campaign Amounts	2,851,400	4,207,300	117,998	3,550,500	3,197,900	228,488	15.46
With Mobile Money Payment		4,207,300			1,086,950		34.57