Does Information Break the Political Resource Curse?

Experimental Evidence from Mozambique, Armand et al. (2020).

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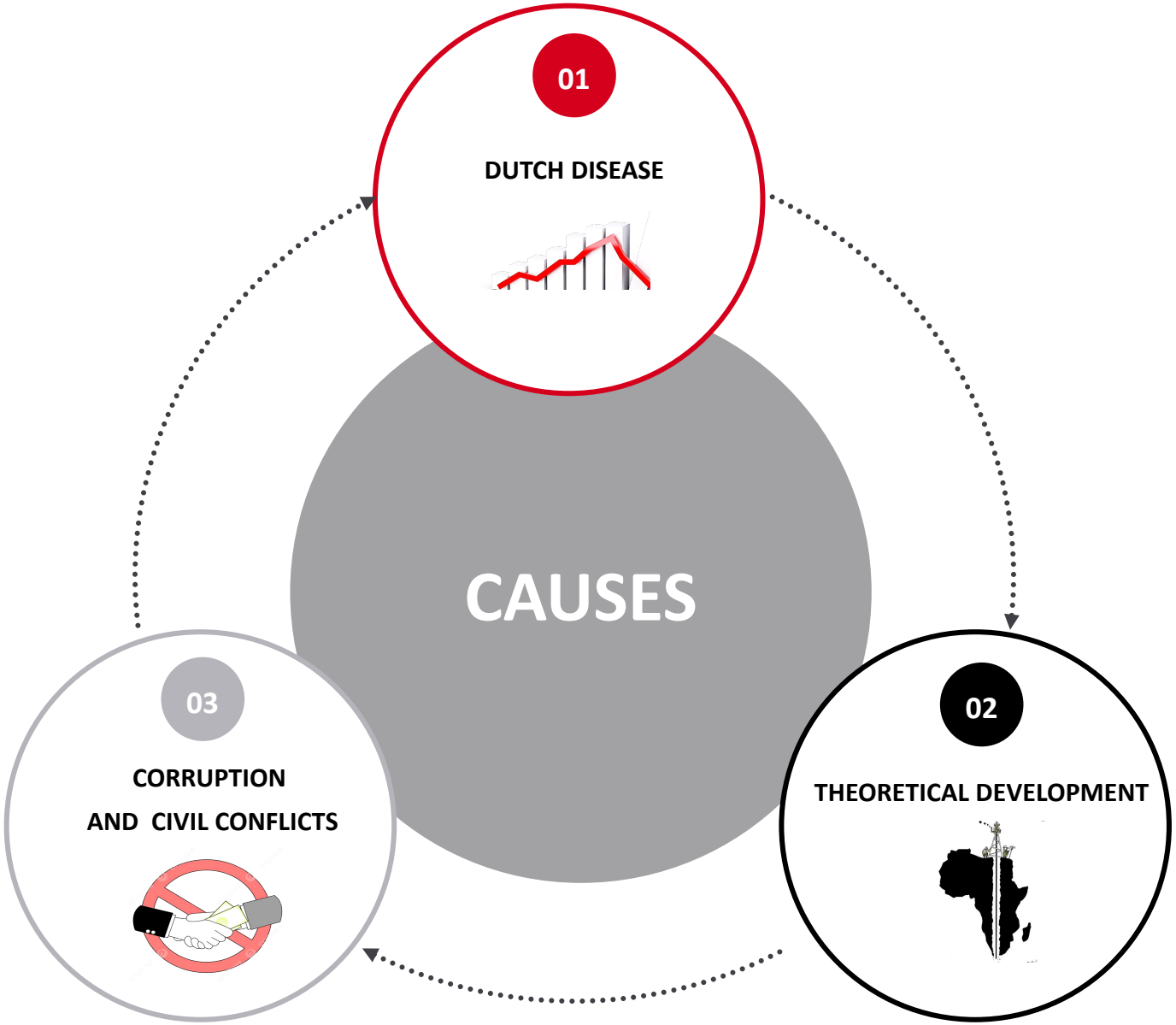
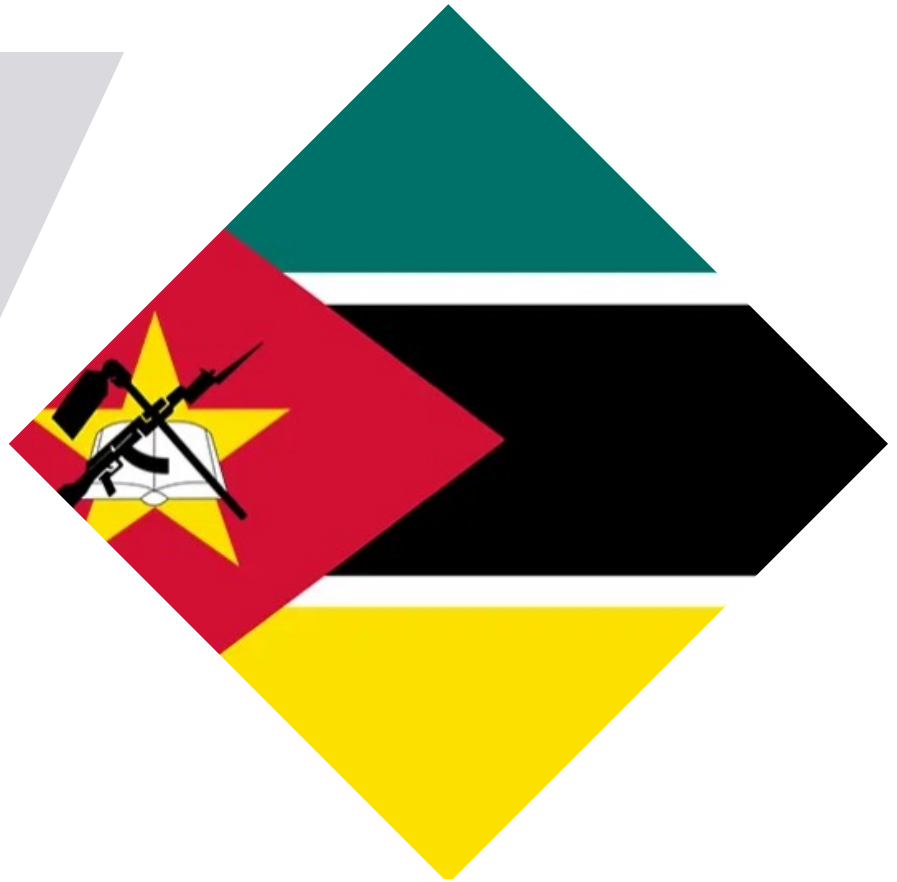
Agenda

Resource Curse

The ***resource curse*** refers to a phenomenon where countries rich in natural resources, such as oil, gas, or minerals, encounter economic and political challenges instead of benefiting from their resource wealth.

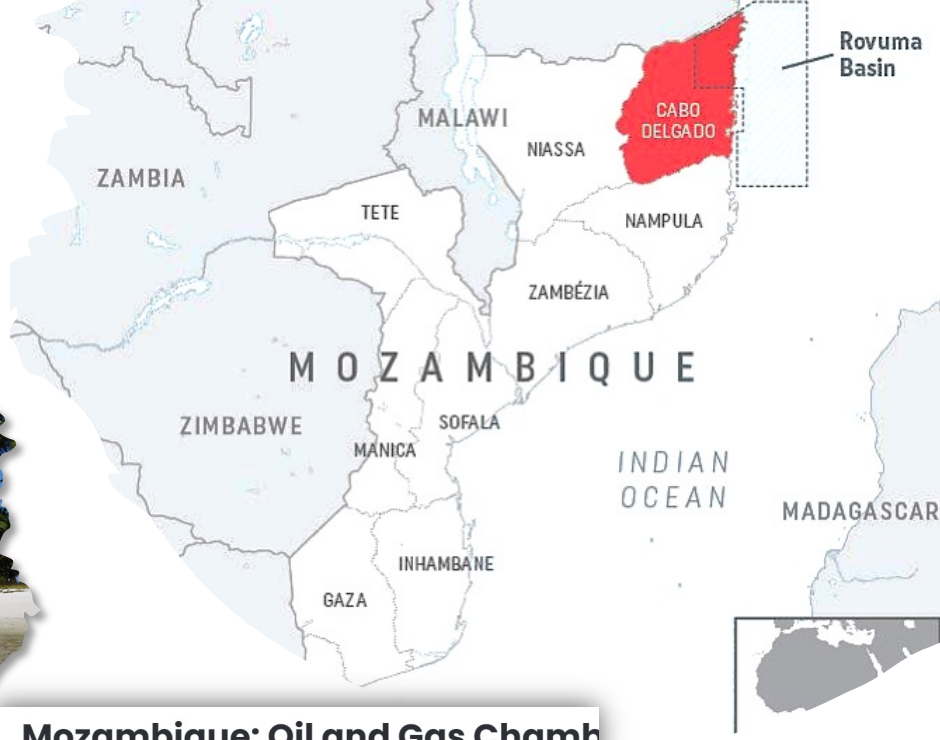

01
DUTCH DISEASE
CAUSES
02
THEORETICAL DEVELOPMENT
03
CORRUPTION
AND CIVIL CONFLICTS

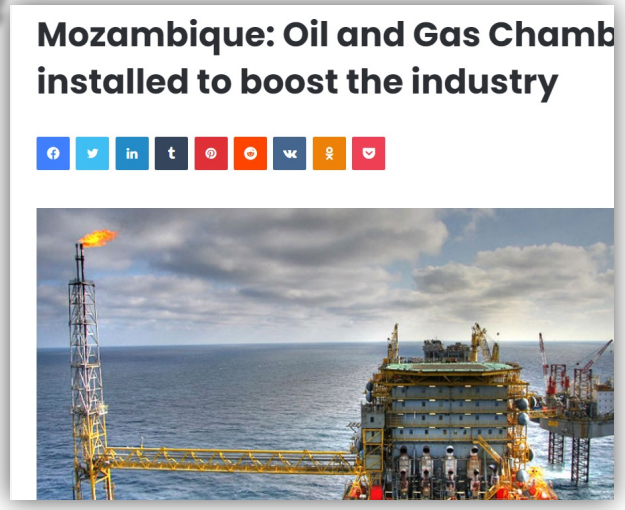
Agenda



Mozambique’s Gas Discovery: What is the context?

- **Location:** Northern Mozambique, Rovuma Basin.
- **Significance:** Massive discovery of 180 trillion cubic feet of natural gas.
- **Potential Impact:** Transformation of Mozambique into the third-largest global exporter of liquefied natural gas **(LNG)**.
- **Economic Potential:** High, but challenges due to the risks of resource and revenue mismanagement.
- **Socioeconomic Context:** Mozambique is a low-income country, particularly in **Cabo Delgado** province.





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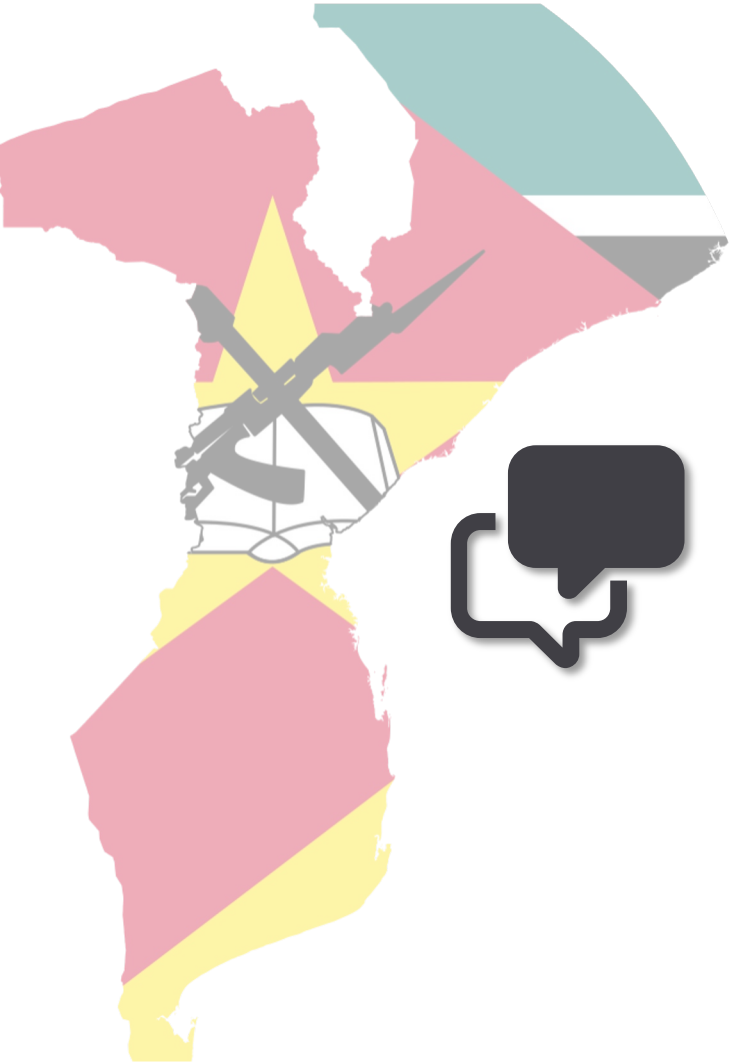
Research Question



How to counter the Resource Curse?

What are the effects of an information campaign on violence, citizen mobilization, and demand for responsibility in Mozambique?

Agenda

Methodology: Randomized Control Trial Approach

Sampling and Randomization

Sample: 206 Communities

Randomization Process: Communities randomly assigned to different treatment groups

Leader Treatment
Community Treatment
Control Group

Implementation of Intervention

Two Interventions:

Information Module to Political Leaders

Information Module to Local Leaders and Communities

No Module to Control Group

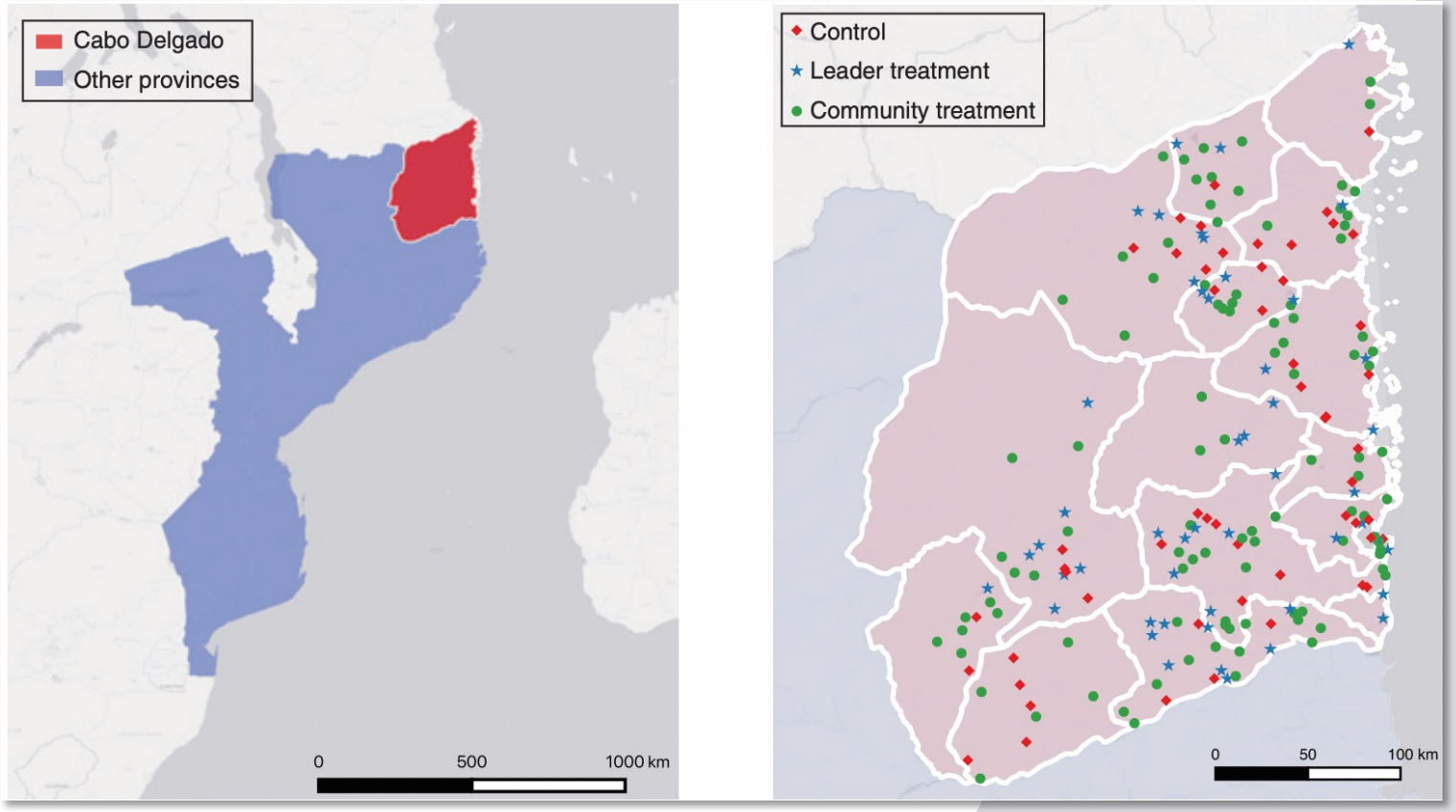
Data Collection & Analysis

Ordinary Least Squares Regression (OLS)

Estimation of Treatment Effects on:

- Violence
- Information and Perception
- Political Outcomes

Sampling and Randomization: Treatment Groups



Sample: 206 Communities

- 25% Female, 57% Muslim, Ø45 Years, 30% without Formal Education
- 7% Urban Areas, 11% Semi-Urban Areas

Random Allocation to Treatment or Control Groups:

Leader Treatment, Community Treatment (with and without Deliberation Module), Control Group

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Intervention and Setting

Information Module on: Community Rights & Gas Windfall

01 Leader Treatment

Information Module to Political Leaders

- **Verbal Presentations**
- **Distribution of a pamphlet**: hand delivered

02: Community Treatment

Information Module to Leaders & Citizens

- **Deliberation Module:** to facilitate discussions and deliberations within the communities
- **Community Meetings:** live community theater presentation
- **Door-to-Door Contact**

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Analysis: Ordinary Least Square Regression

$$\mathbf{Y_{ij} = \alpha + \beta_1\, T1_j + \beta_2\, T2_j + \gamma\, Z_j + \sigma\, X_{ij} + \varepsilon_{ij}}$$

$Y_{ij} = \alpha + \beta_1\, T1_j + \beta_2\, T2_j + \gamma\, Z_j + \sigma\, X_{ij} + \varepsilon_{ij}$

Dependent Variable i.e. the specific outcome being measured for individual i in community j

$Y_{ij} = \alpha + \beta_1\, T1_j + \beta_2\, T2_j + \gamma\, Z_j + \sigma\, X_{ij} + \varepsilon_{ij}$

Indicator Variable for Living in Community with Leader or Community Treatment

$Y_{ij} = \alpha + \beta_1\, T1_j + \beta_2\, T2_j + \gamma\, Z_j + \sigma\, X_{ij} + \varepsilon_{ij}$

Set of Control Variables and Individual Characteristics for either leaders or citizens

Analysis: Hypothesis Testing

$$Y_{ij} = \alpha + \beta_1 T1_j + \beta_2 T2_j + \gamma Z_j + \sigma X_{ij} + \varepsilon_{ij}$$

01 $H_0: \beta_1 = 0$

Treatment 1 has an impact

Effect of leader-focused information campaign

If $\beta_1 = 0$: leader treatment does not affect measured outcomes like violence, information and perception and political outcomes

02 $H_0: \beta_2 = 0$

Treatment 2 has an impact

Effect of community-treatment information campaign

If $\beta_2 = 0$: community treatment does not affect measured outcomes violence, information and perception and political outcomes

03 $H_0: \beta_1 - \beta_2 = 0$

Impact is different across the treatments

Test the difference in the effectiveness of the treatments

If $\beta_1 - \beta_2 = 0$: there is no significant difference in the impact of the leader-focused treatment versus the community-wide treatment on the outcomes

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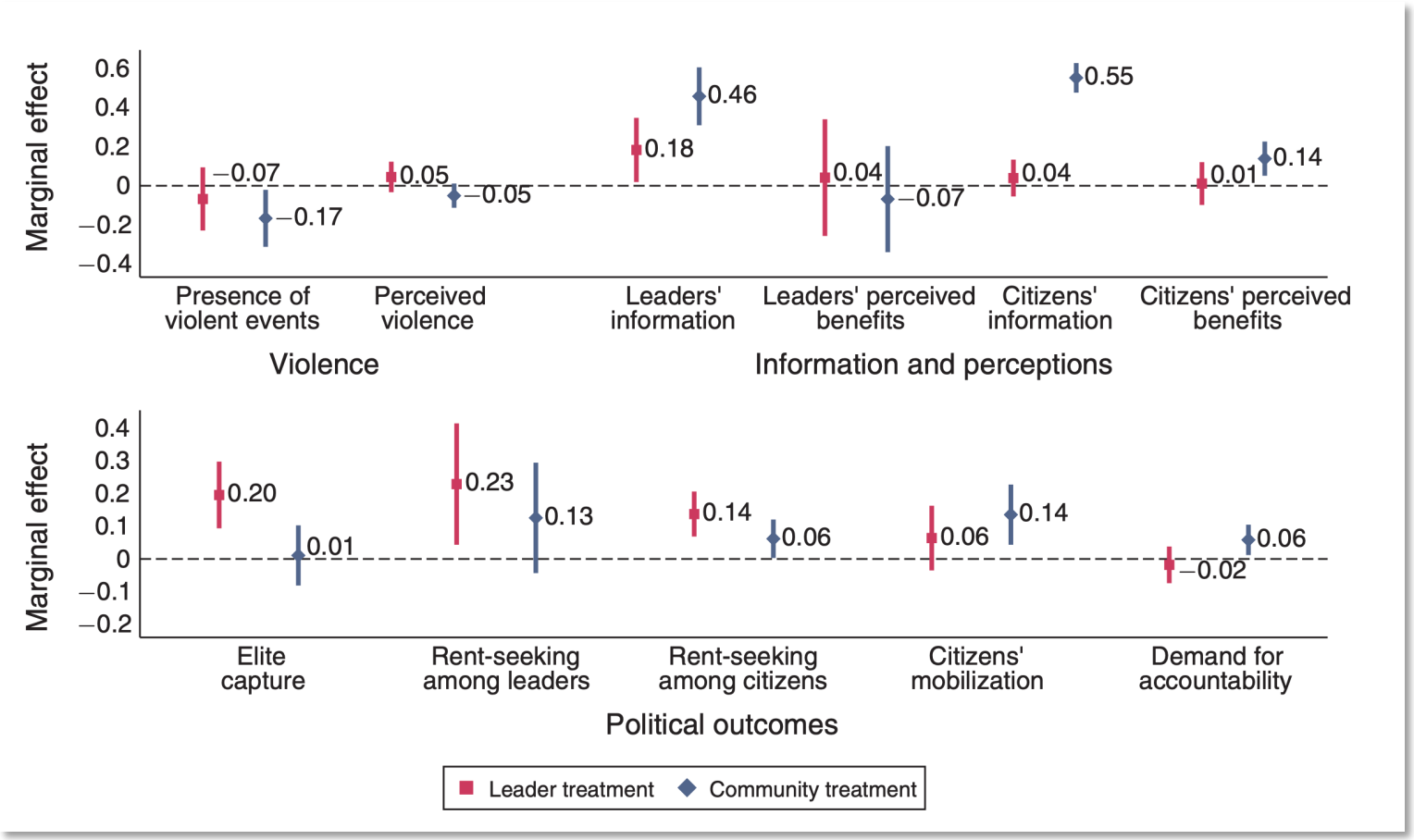
Aggregated Findings



Leader Treatment

- Smaller effect on violence
- Increased knowledge & awareness
- Elite capture & rent-seeking

Community Treatment

- Large negative impact on violence
- Large positive effect on information
- Increased mobilization & demand accountability

Individual Outcomes: Violence – Community Treatment

General

Significant negative effects

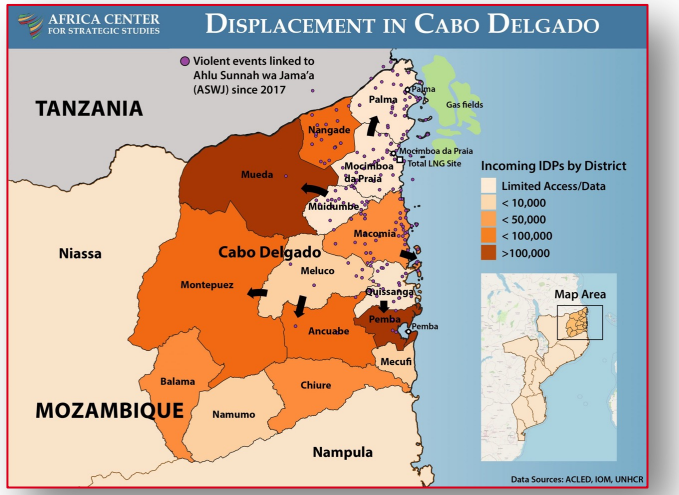
Violent Events

Lower probability observing violent events
Decrease of fatalities

Involvement

Support self-reported involvement

2017, Cabo Delgado: rise in violence (extremist groups)



Individual Outcomes: Information & Perception

Leader Treatment	Community Treatment
Increase awareness & knowledge local leaders	
No effect leaders' perceived benefits	Increase awareness & knowledge citizens
No effects citizen awareness & knowledge	Citizen optimism about future benefits

Individual Outcomes: Politics

Community Treatment

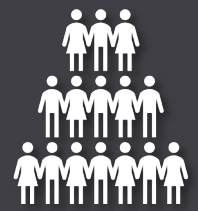
Increase demand accountability

Increase mobilization

Leader Treatment

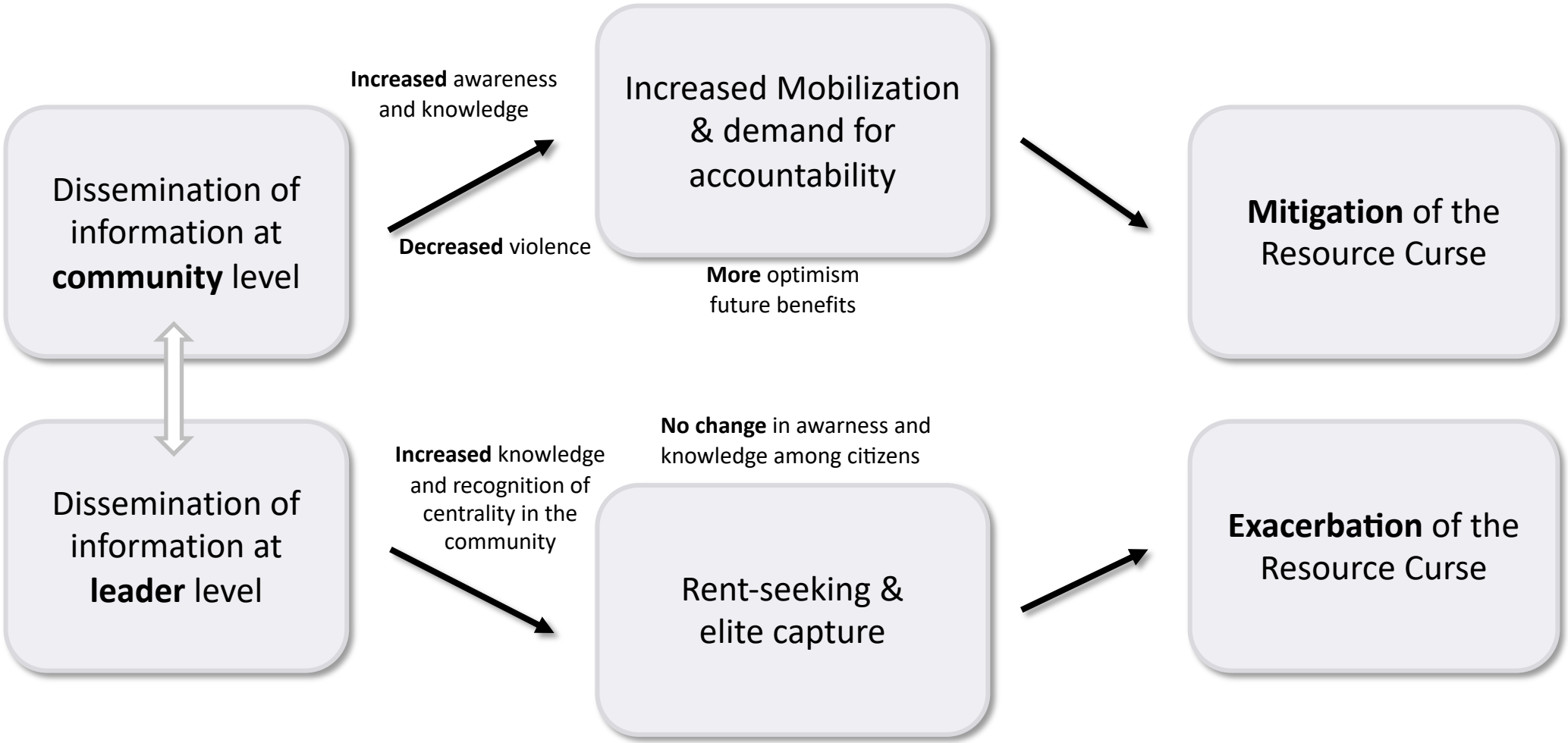
Rent-seeking

Elite Capture



Overview

Countering the resource curse



Implications

Research Implications

- Experimental data
- Effectiveness of knowledge sharing
- Impact on violence

Policy Implications

- Promotion of knowledge sharing
- Prevention of conflicts
- Crucial role of transparency and accountability
- Inclusive decision-making

Positive impact of community treatment

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Limitations

No direct causal explanation related to extremist groups

Alternative explanations (spillover effects, unobserved factors)

Generalizability

- Unfit for real-world situations
- Only for specific context
- Only for specific resource (natural gas)

Long-term effects

Future Research

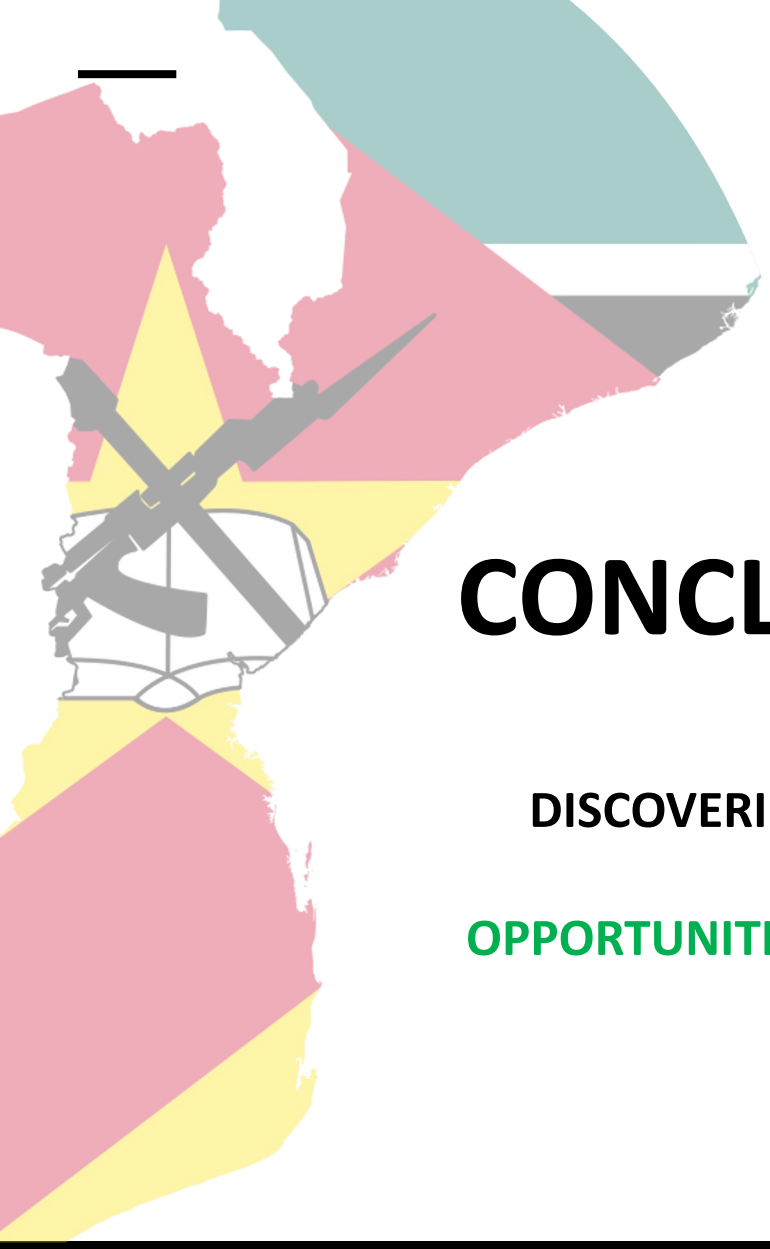
01 Experiments over Time

02 More research into alternative explanations

03 Role of institutions & governance

04 More research into extremist groups

Suggested Directions



CONCLUSION

DISCOVERING NATURAL GAS

OPPORTUNITIES AND CHALLENGES

- Community-level information campaigns
- Significant behavior and attitude changes
- Less violence, increased engagement
- Leadership considerations

Sources

Armand, A., Coutts, A., Vicente, P. C., & Vilela, I. (2020). Does information break the political resource curse? Experimental evidence from Mozambique. *American Economic Review*, *110*(11), 3431-3453.

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Appendix

TABLE 1—VIOLENCE

	Presence of violent events			Perceived violence	
	ACLED (1)	GDELT (2)	ACLED + GDELT (3)	Sympathy for violence (4)	Involved in violence (5)
(T1) Leader treatment	−0.025	−0.017	−0.047	−0.002	−0.012
	(0.031)	(0.028)	(0.035)	(0.035)	(0.026)
	[0.61–0.61]	[0.61–0.61]	[0.31-0.40]	[0.95–0.95]	[0.87–0.87]
(T2) Community treatment	−0.057	−0.054	−0.085	−0.038	−0.052
	(0.028)	(0.026)	(0.032)	(0.031)	(0.021)
	[0.08–0.16]	[0.08–0.16]	[0.03–0.05]	[0.23–0.51]	[0.04–0.10]
Observations	206	206	206	1,522	1,827
R^2	0.275	0.733	0.656	0.043	0.060
Mean (control group)	0.055	0.091	0.127	0.323	0.187
T1 = T2 (p-value)	0.245	0.145	0.223	0.174	0.087
T1 = T2 (adjusted p-value, row-level)	0.226	0.200	0.226	0.188	0.188
T1 = T2 (adjusted p-value, table-level)	0.458	0.376	0.458	0.478	0.350
Lagged dependent variable	Yes	Yes	Yes	Yes	Yes

Notes: Estimates based on OLS regressions. All regressions present estimates using equation (1), including the lagged value of the dependent variable. Standard errors are reported in parentheses. In columns 4 and 5 standard errors are clustered at the community level. p-values adjusted for multiple hypothesis testing are presented in brackets (see Section IV for details). The first p-value corresponds to jointly testing coefficients grouped by rows (row-level), the second p-value corresponds to jointly testing that T1, T2, and T1 − T2 are different from zero (table-level). Testing is performed separately for columns 1 through 3 and columns 4 and 5. Dependent variables by column: (1) *ACLED*: indicator variable equal to 1 if an event was recorded in ACLED (attacks against civilians) and occurred in the post-intervention period in proximity to the community, and 0 otherwise; (2) *GDELT*: indicator variable equal to 1 if an event was recorded in GDELT (conventional and non-conventional violence) and occurred in the post-intervention period in proximity to the community, and 0 otherwise; (3) *ACLED + GDELT*: indicator variable equal to 1 if an event was recorded in ACLED (attacks against civilians) or GDELT (conventional and non-conventional violence) and occurred in the post-intervention period in proximity to the community, and 0 otherwise; (4) *Sympathy for violence*: indicator variable equal to 1 if the respondent believes violence is justified to defend a cause, and 0 otherwise; (5) *Involved in violence*: indicator variable equal to 1 if the respondent reports having witnessed and being involved in any type of violence (physical, against women, verbal, theft, and property destruction) in the 3 months prior to the interview, and 0 otherwise. Additional details about the dependent variables are presented in online Appendix D.1. Specifications in columns 1 through 3 include community and leader-level controls. Specifications in columns 4 and 5 include community and household-level controls. The full list of controls is presented in Section IV.

Appendix

TABLE 2—INFORMATION AND PERCEPTIONS ABOUT THE NATURAL GAS DISCOVERY

	Awareness (1)	Knowledge (2)	Perceived benefit to the … community (3)	Perceived benefit to the … household (4)
Panel A. Leaders				
(T1) Leader treatment	0.043	0.038	0.016	0.014
	(0.019)	(0.018)	(0.065)	(0.079)
	[0.10–0.17]	[0.10–0.18]	[0.94–0.99]	[0.94–0.99]
(T2) Community treatment	0.052	0.056	−0.008	−0.042
	(0.018)	(0.016)	(0.059)	(0.072)
	[0.02–0.04]	[0.01–0.01]	[0.88–0.99]	[0.73–0.98]
Observations	203	203	204	204
R^2	0.146	0.273	0.154	0.125
Mean (control group)	0.964	0.627	0.868	0.830
T1 = T2 (*p*-value)	0.648	0.255	0.671	0.430
T1 = T2 (adjusted *p*-value, row-level)	0.781	0.515	0.781	0.669
T1 = T2 (adjusted *p*-value, table-level)	0.981	0.776	0.981	0.925
Lagged dependent variable	Yes	Yes	No	No
Panel B. Citizens				
(T1) Leader treatment	−0.003	−0.001	−0.009	0.015
	(0.033)	(0.020)	(0.031)	(0.031)
	[0.99–0.99]	[0.99–0.99]	[0.97–0.97]	[0.96–0.96]
(T2) Community treatment	0.251	0.169	0.044	0.071
	(0.023)	(0.015)	(0.023)	(0.026)
	[0.00–0.00]	[0.00–0.00]	[0.08–0.25]	[0.02–0.07]
Observations	1,886	1,886	1,592	1,573
R^2	0.272	0.396	0.135	0.114
Mean (control group)	0.671	0.449	0.779	0.692
T1 = T2 (*p*-value)	0.000	0.000	0.046	0.050
T1 = T2 (adjusted *p*-value, row-level)	0.001	0.001	0.098	0.098
T1 = T2 (adjusted *p*-value, table-level)	0.001	0.001	0.252	0.252
Lagged dependent variable	Yes	Yes	No	No

Notes: Estimates based on OLS regressions. Columns 1 and 2 present estimates using equation (1), including the lagged value of the dependent variable. Columns 3 and 4 present estimates using equation (1). Standard errors are reported in parentheses. In panel B standard errors are clustered at the community level. *p*-values adjusted for multiple hypothesis testing are presented in brackets and take into account the larger set of variables reported in online Appendix Table D2 (see Section IV for details of the procedure and online Appendix Tables D5–D6 for the results for the full set of outcome variable). The first *p*-value corresponds to jointly testing coefficients grouped by rows (row-level), the second *p*-value corresponds to jointly testing that T1, T2, and T1 − T2 are different from zero (table-level). Panel A refers to outcomes related to local leaders, while panel B refers to outcomes related to citizens. Dependent variables by column: (1) *Awareness*: indicator variable equal to 1 if the respondent heard about the natural gas discovery, and 0 otherwise; (2) *Knowledge*: constructed index that averages 15 indicator variables related to knowledge about the location of the discovery, whether exploration has started, whether the government is receiving revenues, when extraction is expected to start, and which firms are involved (online Appendix F.2 provides additional information about the construction of the index); (3) *Perceived benefit to the community*: indicator variable equal to 1 if the respondent agrees or fully agrees that the community will benefit from natural gas, and 0 otherwise; (4) *Perceived benefit to the household*: indicator variable equal to 1 if the respondent agrees or fully agrees that his/her household will benefit from natural gas, and 0 otherwise. Additional details about the dependent variables are presented in online Appendix D.1. In columns 3 and 4, the sample is restricted to respondents aware of the natural gas discovery. Specifications in Panel A include community- and leader-level controls. Specifications in panel B include community- and household-level controls. The full list of controls is presented in Section IV.

TABLE 3—POLITICAL OUTCOMES

	Elite capture		Rent-seeking			Citizens' mobilization		Demand for accountability
	Appropriation (1)	Preference for mid-performers (2)	Interaction between leaders (3)	Citizen-chiefs interaction (4)	Share bid for meeting (5)	Community meetings attendance (6)	Matching grants contribution (7)	Voice (8)
(T1) Leader treatment	0.144	0.193	0.162	0.092	0.027	0.004	0.152	0.025
	(0.053)	(0.097)	(0.053)	(0.035)	(0.013)	(0.022)	(0.191)	(0.053)
	[0.06–0.14]	[0.24–0.56]	[0.01–0.02]	[0.06–0.12]	[0.13–0.33]	[0.97–0.99]	[0.89–0.98]	[0.76–0.99]
(T2) Community treatment	0.005	0.122	0.114	0.022	0.004	0.039	0.478	0.123
	(0.048)	(0.087)	(0.048)	(0.029)	(0.011)	(0.016)	(0.180)	(0.044)
	[0.99–1.00]	[0.70–0.91]	[0.05–0.10]	[0.83–0.95]	[0.90–0.98]	[0.09–0.26]	[0.07–0.19]	[0.06–0.15]
Observations	205	206	203	1,890	1,922	1,803	1,510	1,718
R^2	0.235	0.145	0.212	0.101	0.022	0.086	0.065	0.068
Mean (control group)	0.227	0.491	0.818	0.531	0.498	0.892	0.892	2.463
T1 = T2 (*p*-value)	0.004	0.422	0.311	0.022	0.021	0.076	0.070	0.035
T1 = T2 (adjusted *p*-value, row-level)	0.036	0.928	0.620	0.085	0.085	0.365	0.365	0.175
T1 = T2 (adjusted *p*-value, table-level)	0.095	0.997	0.829	0.240	0.236	0.640	0.634	0.482
Lagged dependent variable	No	No	Yes	Yes	No	Yes	No	Yes

Notes: Estimates based on OLS regressions. Columns 1, 2, 5, and 7 present estimates using equation (1). Columns 3, 4, 6, and 8 present estimates using equation (1), including the lagged value of the dependent variable. Standard errors are reported in parentheses. In columns 4–8 standard errors are clustered at the community level. *p*-values adjusted for multiple hypothesis testing are presented in brackets and take into account the larger set of variables reported in online Appendix Tables D3–D4 (see Section IV for details of the procedure and online Appendix Tables D7–D10 for the results for the full set of outcome variable). The first *p*-value corresponds to jointly testing coefficients grouped by rows (row-level), the second *p*-value corresponds to jointly testing that T1, T2, and T1 − T2 are different from zero (table-level). Dependent variables by column: (1) *Appropriation*: share difference between available funds and expenses in the funds for meeting SCA (online Appendix C.2.3); (2) *Preference for mid-performers*: indicator variable equal to 1 if the community is in the second, third, or fourth quintiles of the sample distribution of the difference between the average Raven's score of individuals chosen by leader in the taskforce SCA (online Appendix C.2.1), and of representative individuals selected for the survey in the same community; (3) *Interaction between leaders*: indicator variable equal to 1 if the leader reports having talked to or called another political leader (chiefs in other communities, political representatives at the municipal, district, and provincial levels, as well as local party representatives) in the 6 months prior to the interview, and 0 otherwise; (4) *Citizen-chiefs interaction*: indicator variable equal to 1 if the respondent reports having talked to or called chiefs (formal community leader and their closest collaborators) in the 6 months prior to the interview, and 0 otherwise; (5) *Share bid for meeting*: share of total bids allocated by the citizen in the auctions SCA (online Appendix C.2.2) to attend the meeting with the district administrator; (6) *Community meetings attendance*: indicator variable equal to 1 if the respondent attended at least one community meeting in the 12 months prior to the interview, and 0 otherwise; (7) *Matching grants contribution*: amount (reported in logarithms) contributed by the respondent in the matching grants SCA (online Appendix C.2.4); (8) *Voice*: average level of (self-reported) voice with provincial and national authorities (1 = no voice/4 = full voice). Additional details about the dependent variables are presented in online Appendix D.1. Specifications in columns 1–3 include community- and leader-level controls. Specifications in columns 4–8 include community- and household-level controls. The full list of controls is presented in Section IV.