Gang Rule: Understanding and Countering Criminal Governance

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2. Setting: The *Combos* of Medellín
3. Empirical Strategy
4. Results
5. Conclusions

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- A gang g and a state s compete offering (substitutable) governance services to residents in quantities q_i, where the state's quantity is exogenously fixed at $\overline{q}_s$.
- An inverse demand function is given by:

$$p = \alpha - \beta q_g - \gamma \overline{q}_s$$

- $\beta > 0$ makes it downward-sloping.
- $\gamma > 0$ implies state and gang governance are substitutes.
- Gangs have a constant marginal cost c_g.

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- Because $\gamma > 0$ and $\beta > 0$, state and criminal governance are strategic substitutes.
- When the state *increases* its presence, the gang's optimal reaction is to *decrease* governance.

Indirect Benefits

- Suppose profits are now given by:

$$V_g = (p - c_g)q_g + \delta(q_g, \overline{q}_s) \cdot \pi_g$$

- $\delta(\cdot)$ is a Contest Success Function, such as $\frac{q_g}{q_g + \overline{q}_s}$.
- π_g is the gang's return to complete control of the territory, such as retail drug sales and other business lines, or intangible benefits.

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- π_g is the gang's return to complete control of the territory, such as retail drug sales and other business lines, or intangible benefits.
- Let $\lambda \equiv \frac{\partial^2 \delta}{\partial q_g \overline{q}_s}$ and $\psi \equiv \frac{\partial^2 \delta}{(\partial q_g)^2}$:

$$\frac{\partial q_g^*(\overline{q}_s)}{\partial \overline{q}_s} = \frac{\lambda \pi_g - \gamma}{2\beta - \psi \pi_g}$$

Second Derivatives

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- λ is the cross-partial derivative of both quantities.
- For the most general CSF, $\lambda = \frac{q_g - \overline{q}_s}{(q_g + \overline{q}_s)^3}$.
  - When $q_g > \overline{q}_s$, $\lambda > 0$. When $q_g < \overline{q}_s$, $\lambda < 0$.

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$$\psi = \frac{\partial^2 \delta}{(\partial q_g)^2}$$

- ψ can be interpreted as rate of increase of the marginal returns to governance.
  - When δ is concave, $\psi < 0$. When δ is convex, $\psi > 0$.

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Case #3: $\alpha(Q)$

If demand were endogenous to governance quantities, they can be strategic complements.

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The Origins of Organised Crime in Medellín

- Medellín was at the centre of international drug trafficking in the 1980s.
- After the fall of the Medellín Cartel in the mid 1990s, international drug cartels did not return to the city.
- A short-lived criminal monopoly was established in 2003.
- After the extradition of its leader, the monopoly dissolved into hundreds of small gangs: *Combos*.
- Prior to the emergence of combos as the main criminal actors in Medellín, retail drug sales were uncommon.

Combos

- Combos are small local gangs that operate independently.
- Approximately 400 are spread all over the city and typically span no more than a few city blocks.
- They are at the base of a pyramidal structure in the city, reporting to about 18 *razones* (mafias) which act as their upstream suppliers.
- They number a few dozen permanent members.

Combo Activities

- Combos are primarily retail drug organisations.
- Local governance “goods” are supplied by combos:
  - Security.
  - Conflict resolution.
  - Contract enforcement.
  - Suppressing anti-social and disruptive behaviour.
- They are deeply intertwined with local communities.
- Security fees are collected from businesses in exchange for protection.
- They frequently and openly use violence and coercion to govern.

Who do people trust?

Small local gangs known as combos still control large areas in and around the city. "If you have a problem here you go to a combo, not the police," says Juliana, [a] maid from Comuna 1. Research published by the National Bureau of Economic Research last year showed that Juliana's view is shared by most of Medellín's poorer residents, who have more faith in the combos to respond rapidly to their problems than they do in the police or the mayor's office. As well as city taxes, many locals pay a vacuna (vaccine) to the combos "for security", says Juliana. When a truce among the combos broke down in 2009 it led to a spike in homicides. They have since patched up their differences, but that could change.

The Economist, 2022.

Who governs?

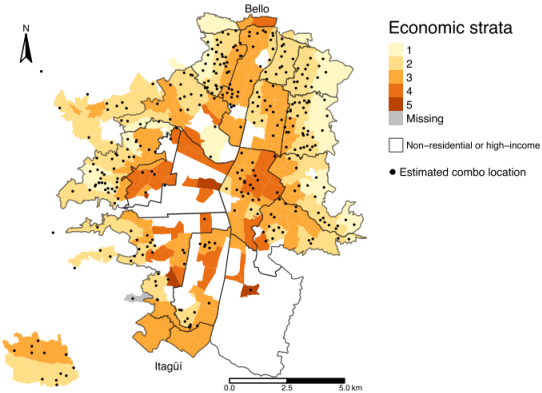

FIGURE 2
Combo census: Estimated locations, with barrio income level

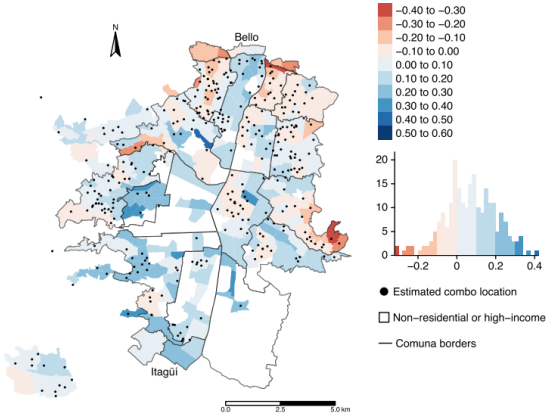

FIGURE 3
Relative state governance by barrio, 2019

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  - 140 members, half of them in prisons, of 79 groups (combos and razones).

Survey Descriptive Statistics (1)

TABLE 1

State and combo governance and legitimacy, barrio survey averages, 2019

	Frequency/Rate (0–1 Scale)				
	State		Combo		Relative state governance
	Estimate (1)	SD (2)	Estimate (3)	SD (4)	Difference (5)
Governance Index	0.41	0.26	0.34	0.29	0.07
How often they intervene when:					
HH: Someone is making noise	0.43	0.38	0.19	0.30	0.23
HH: Home improvements affect neighbours	0.41	0.38	0.25	0.34	0.16
HH: There is domestic violence	0.51	0.37	0.35	0.37	0.15
HH: Two drunks fight on the street	0.54	0.36	0.40	0.37	0.13
Biz: Someone disturbs a business	0.50	0.38	0.36	0.38	0.12
Biz: You have to react to a robbery	0.52	0.37	0.40	0.39	0.11
Biz: It is necessary to prevent a theft	0.45	0.37	0.38	0.39	0.07
Biz: Businesses in this sector are robbed	0.42	0.39	0.35	0.38	0.05
HH: People smoking marijuana near children	0.29	0.36	0.25	0.36	0.04
HH: A car or motorbike is stolen	0.46	0.37	0.43	0.38	0.04

Survey Descriptive Statistics (2)

HH: Someone is threatening someone else	0.42	0.36	0.41	0.37	0.01
HH: You have to react to a robbery	0.46	0.36	0.45	0.38	0.01
HH: Someone is mugged on the street	0.39	0.36	0.41	0.38	−0.01
HH: It is necessary to prevent a theft	0.40	0.36	0.42	0.38	−0.03
HH: Kids fight on the street	0.29	0.35	0.32	0.37	−0.04
Biz: Someone does not want to pay a debt	0.17	0.31	0.23	0.35	−0.06
HH: Someone refuses to pay a big debt	0.22	0.31	0.39	0.38	−0.16
Accessibility Index	0.42	0.23	0.57	0.28	−0.16
How easy is it to contact...	0.45	0.25	0.58	0.31	−0.13
How fast is the....	0.38	0.29	0.54	0.36	−0.16
Legitimacy Index	0.58	0.21	0.43	0.28	0.13
How much do you trust the...	0.57	0.30	0.36	0.36	0.19
How fair is the...	0.55	0.27	0.41	0.35	0.11
How do you rate the...	0.60	0.22	0.51	0.28	0.09
How would your neighbours trust the...	0.59	0.23	0.50	0.29	0.09
How much do your neighbours trust the...	0.57	0.28	0.47	0.36	0.09

Research Question

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- An administrative reform in 1987 offers precisely that.
- Six *comunas* were divided into 16, splitting them in two or three.
- State presence, in the form of police patrols, dispute resolution, and family services, is organised at the comuna level (from local headquarters).
- Simultaneously, security spending at the city level increased dramatically.

Illustration

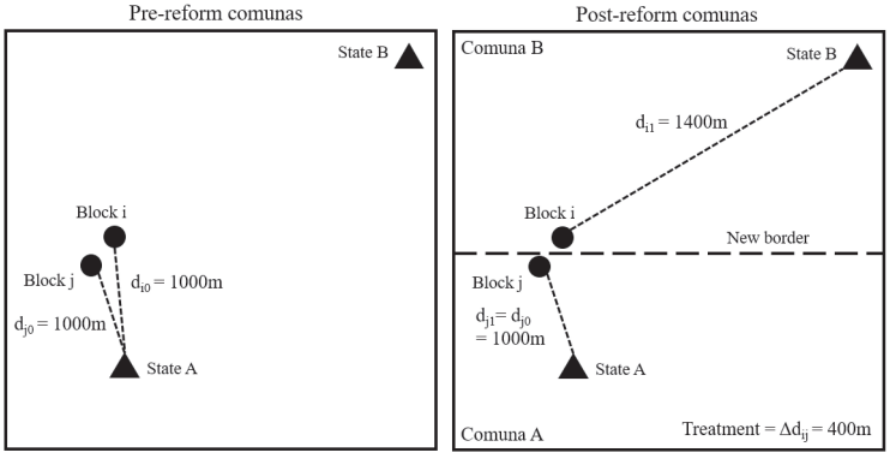

FIGURE 1
Stylized illustration of the natural experiment

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  - The only thing that changes discontinuously at the border is proximity to comuna-based services.
  - 1987 borders were not drawn in response to gang behaviour.
- If the assumptions hold, all confounder differences between nearby blocks will be uncorrelated with the distance shock.

Econometric Estimation

$$\Delta Y_{ijb} = \alpha_b + \beta \Delta d_{ij} + \theta \Delta X_{ij} + \lambda B_{ij} + \varepsilon_{ijb}$$

- ΔY_{ijb} is the difference in outcomes within block pairs.
- ΔX_{ij} is a vector of pair differences in control variables.
- B_{ij} is a vector of each block's distance to a common point on the border.
- α_b are border fixed effects.
- Δd_{ij} is the intensity of the distance shock (measured in 100m).
- $\beta_{combo} > 0$ implies strategic complementary between state and gang governance.

Balance Test (1)

TABLE 2

Balance test: How block pair differences vary with Δd_{ij}

Effect on ΔX	Subsample Mean (SD) (1)	Effect of moving 100 m closer to state Estimate (SE) [p-value] (2)	As % of sample mean Estimate (3)
Median age (1993)	25.77	0.201	0.8
	(6.17)	(0.185)	
		[0.312]	[0.3]
Share of population no education (1993)	0.04	−0.000	−0.5
	(0.06)	(0.002)	
		[0.881]	[0.9]
Share completed primary ed. (1993)	0.82	−0.003	−0.3
	(0.10)	(0.004)	
		[0.524]	[0.5]
Share completed secondary ed. (1993)	0.46	0.000	0.1
	(0.20)	(0.005)	
		[0.947]	[0.9]
Share completed higher ed. (1993)	0.10	0.003	2.8
	(0.11)	(0.003)	
		[0.374]	[0.4]
Log of total population (1993)	4.75	0.014	0.3
	(1.03)	(0.053)	
		[0.824]	[0.8]
Share of non-mestizo population (1993)	0.00	0.000	6.7
	(0.01)	(0.000)	
		[0.212]	[0.2]
Share of women (1993)	0.54	−0.003	−0.6
	(0.06)	(0.004)	
		[0.486]	[0.5]

Balance Test (2)

Block average elevation (metres)		1, 606.89	−1.300	−0.1
		(114.60)	(0.913)	
			[0.233]	[0.2]
Block average slope		89.95	−0.021	−0.0
		(0.72)	(0.015)	
			[0.280]	[0.3]
Block present in 1948		0.17	0.004	2.4
		(0.37)	(0.008)	
			[0.625]	[0.6]
Block present in 1970		0.65	−0.006	−1.0
		(0.48)	(0.027)	
			[0.861]	[0.9]
Block present in 1985		0.85	−0.042*	−5.0*
		(0.36)	(0.017)	
			[0.055]	[0.1]
Metres to schools in 1986		225.39	−13.480**	−6.0**
		(132.81)	(5.008)	
			[0.021]	[0.0]
Metres to health centres in 1986		787.17	−9.483	−1.2
		(506.22)	(9.734)	
			[0.409]	[0.4]
Metres to business centres		327.79	−2.219	−0.7
		(55.38)	(3.097)	
			[0.550]	[0.5]
Block area (m^2)	4, 992.17		−484.034	−9.6
	(7, 242.60)		(326.610)	
			[0.208]	[0.2]

Heterogeneity Analysis

$$\Delta Y_{ijb} = \alpha_b + \beta \Delta d_{ij} + \gamma \pi_{ij} + \delta \Delta d_{ij} \times \pi_{ij} + \theta \Delta X_{ij} + \lambda B_{ij} + \varepsilon_{ijb}$$

- π_{ij} is a measure of the potential for illicit rents, proxied by distance to drug markets (exogeneised through a predictive model and standardised).
- δ captures the extent to which the distance shock resulted in more governance in present-day drug hotspots.
- If governance is a way to protect illicit rents, $\delta > 0$.

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Qualitative Evidence: Clues

- Gang members insist on two reasons to govern:
  - Ensuring order minimises the police's need to enter a neighbourhood (which combos want to avoid).
  - Loyalty from residents helps combos when the police do enter.
- Vacunas are small, highly subsidised, and selectively charged.
- Governance is a way to protect other rents (π_g), not as a revenue source in and of itself.
- State and gang governance are imperfect substitutes. Combos are more effective at enforcing dispute resolutions, thanks to their greater coercive power.

Baseline Results

TABLE 3

Impacts on governance and legitimacy of being 100 metres closer to the state

Effect on ΔY	Subsample Mean (SD) (1)	Effect of moving 100 m closer to state Estimate (SE) [p-value] (2)	Median change as % of sample mean Estimate (3)
Governance ($N = 570{,}563$)			
Δ State Governance Index (0–1)	0.41	0.011	10.8
	(0.19)	(0.007)	
		[0.186]	
Δ Combo Governance Index (0–1)	0.32	0.019**	24.1
	(0.22)	(0.007)	
		[0.027]	
Accessibility ($N = 429{,}384$)			
Δ State Accessibility Index (0–1)	0.42	0.012*	11.6
	(0.16)	(0.006)	
		[0.050]	
Δ Combo Accessibility Index (0–1)	0.54	0.023**	17.7
	(0.23)	(0.008)	
		[0.024]	
Legitimacy ($N = 431{,}425$)			
Δ State Legitimacy Index (0–1)	0.58	0.001	0.9
	(0.14)	(0.008)	
		[0.883]	
Δ Combo Legitimacy Index (0–1)	0.42	0.005	4.8
	(0.21)	(0.014)	
		[0.749]	

Baseline Results Interpretation

- On Combo governance, $\hat{\beta} > 0$, implying that movement closer to local state headquarters *increases* gang governance.
- On accessibility, both the state and combos increase it as they are closer to local state headquarters.
- On legitimacy, no statistically significant results.
- Median Δd is 400 metres.
- Because pre-treatment gang presence was non-existent, these effects should be interpreted as the emergence of gang governance, rather than expansion.
- Because gang borders do not align with administrative ones, this estimate is within the same combo.

Tax Results

Effect on ΔY	Subsample Mean (SD)	Effect of moving 100m closer to state Estimate (SE) [p-value]	Median change as % of sample mean Estimate
	(1)	(2)	(3)
Panel A: Effects on payments to state			
Percentage of bussines paying taxes	0.52 (0.49)	0.010 (0.021) [0.685]	8.1
Approves of city's local taxes	0.60 (0.33)	-0.013 (0.021) [0.627]	-9.2
Says local taxes are too high	0.61 (0.34)	-0.008 (0.015) [0.633]	-5.4
Panel B: Effects on payments to combo			
Payment rate of security fee	0.12 (0.27)	0.005 (0.010) [0.630]	18.1
Says neighbors pay security fees	0.33 (0.36)	0.001 (0.014) [0.968]	0.7
Approves of combo security fee	0.06 (0.16)	-0.003 (0.006) [0.560]	-24.5
Says security fees are too high	0.28 (0.37)	0.041** (0.015) [0.047]	60.1

Heterogeneity Results

TABLE 4

Heterogeneity: Impacts on governance and legitimacy of being 100 metres closer to the historical state, by predicted proximity to major drug plazas

		Governance (Δ)		Accessibility (Δ)		Legitimacy (Δ)	
	Sample Mean (SD) (1)	State Estimate (SE) [*p*-value] (2)	Combo Estimate (SE) [*p*-value] (3)	State Estimate (SE) [*p*-value] (4)	Combo Estimate (SE) [*p*-value] (5)	State Estimate (SE) [*p*-value] (6)	Combo Estimate (SE) [*p*-value] (7)
Effect of moving 100 m closer to state	−4.966	0.011	0.017*	0.009	0.023**	0.002	0.004
	(4.378)	(0.007)	(0.007)	(0.006)	(0.010)	(0.007)	(0.015)
		[0.114]	[0.074]	[0.108]	[0.023]	[0.787]	[0.850]
100 m closer to state X Predicted drug profitability (std.)	−2.016	0.006	0.010**	−0.002	−0.004	−0.010**	−0.011**
	(5.478)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
		[0.158]	[0.039]	[0.46]	[0.90]	[0.044]	[0.024]
Controls and fixed point running var		✓	✓	✓	✓	✓	✓
Bi-directional Border FE		✓	✓	✓	✓	✓	✓
N		563	555	429	384	429	423

Heterogeneity Results Interpretation

- Despite legitimacy not being statistically significant in the main specification, substantial heterogeneity is present.
- Combos govern more in locations near drug markets. The state's governance is evenly allocated.
- Close to drug markets, closeness to the state is associated with a decrease in state and combo legitimacy.
- Consistent with general disapproval of retail drug selling.
- Could imply combo governance is a way to mitigate the negative consequences on legitimacy of the drug business.

Economic and Demographic Results (1)

TABLE 5

Impacts on neighbourhood prosperity and demographics of being 100 metres closer to the local state

Effect on ΔY	Subsample Mean (SD) (1)	Effect of moving 100 m closer to state Estimate (SE) [p-value] (2)	Median change as % of sample mean Estimate (3)
Administrative outcomes (N = 473), index	0.00	0.074*	
	(1.47)	(0.043)	
		[0.090]	
Multidimensional Poverty Index (2018)	13.64	−0.301	−9.1
	(14.23)	(0.603)	
		[0.620]	
Unemployment rate (2018)	0.11	−0.003	−12.3
	(0.07)	(0.004)	
		[0.450]	
Log of total population (2018)	5.56	0.003	0.2
	(1.36)	(0.082)	
		[0.968]	
Log of economic value of land (2014)	13.34	0.017	0.5
	(0.63)	(0.015)	
		[0.238]	
Log of average housing value	11.85	−0.005	−0.2
	(0.62)	(0.031)	
		[0.864]	
School enrollment rate (2018)	0.90	0.011**	5.0
	(0.12)	(0.005)	
		[0.026]	

Economic and Demographic Results (2)

Adult educational attainment (2018)	9.40	0.130*	5.7
	(1.73)	(0.071)	
		[0.075]	
Percent of population who recently migrated (2018)	4.40	−0.003	−0.3
	(3.73)	(0.172)	
		[0.985]	
Count of business in a 100 m radius	109.59	6.563**	24.5
	(102.53)	(3.025)	
		[0.036]	
Survey outcomes ($N = 231$), index	0.00	−0.033	
	(1.41)	(0.045)	
		[0.472]	
Absence of firms	8.10	0.010	16.9
	(14.42)	(0.017)	
		[0.557]	
Log of total number of firms	1.50	0.021	5.7
	(1.17)	(0.041)	
		[0.615]	
Log of mean profits (2019)	13.36	−0.023	−0.7
	(1.16)	(0.074)	
		[0.753]	
Log of mean sales (2019)	14.78	−0.032	−0.9
	(1.17)	(0.087)	
		[0.716]	
Number of employees (2019)	2.38	−0.126	−21.6
	(2.71)	(0.251)	
		[0.619]	

Economic and Demographic Results Interpretation

- Some results on human capital (educational attainment, school enrolment) suggest some selective migration.
- No apparent results on other dimensions.
- The development mechanism ($\alpha(Q)$) may be at play, but in small magnitudes, and not in the dimensions that reflect increased demand for governance.
- No strong evidence this is the driving mechanism behind the original results.

1 A Model of Governance Competition

2 Setting: The *Combos* of Medellín

3 Empirical Strategy

4 Results

5 Conclusions

Findings

- The evidence suggests gang governance behaves as a **strategic complement** to state governance.
- Gang governance is most intense when illicit rents are at stake (π_g), consistent with gang governance being absent in areas where illicit rents are not the main source of revenue (e.g. El Salvador vs Democratic Republic of Congo).
- Potentially, criminal rule is a way to counteract legitimacy losses from retail drug sales and other activities.
- Gang rule might affect semi-strong states more severely than outright weak ones.
- The trade-off is tough: Crackdowns could bring more violence, not less.
- Alternatively, attacking π_g could be a more effective policy response.