

Civilian alternatives to policing:  
Evidence from Medellín's community problem-solving  
intervention *Operación Convivencia*

Chris Blattman  
UChicago

Gustavo Duncan  
EAFIT

Ben Lessing  
UChicago

Santiago Tobón  
EAFIT

## What can cities do in neighborhoods with weak social institutions, persistent street disorder, and entrenched crime and gangs?

- Common reaction is to intensify policing
  - Can reduce serious crime (Chalfin and McCrary, 2017, 2018)
- But has costs to hyper-policed communities (Owens, 2019; Owens and Ba, 2021)
  - Can also undermine the legitimacy and effectiveness of the police themselves
- In response, governments are looking for policing alternatives and supplements
- Especially urgent in Latin America, where urban armed groups frequently compete with the state for civilian loyalty and security provision

# Growing but limited evidence on policing alternatives & supplements

- Reactive

1. Ongoing trials of non-police responses mental health, addiction & homelessness crises (Irwin and Pearl 2020, Seo et al. 2021, Dee and Pyne 2022)
2. Mixed evidence for community-wide “violence interruption” (Butts et al., 2015)

- Preventative

1. Some evidence broad-based jobs or economic support programs (Davis and Heller, 2020; Hjalmarsson et al., 2015; Carr and Packham, 2019)
2. Stronger evidence for social services (e.g. CBT) targeted to highest-risk offenders by outreach workers (Heller et al. 2016, Blattman et al. 2017, 2023; Bhatt et al. 2023)
3. Improving formal and informal dispute resolution capacities can reduce violence (Blattman et al. 2014; Hartman et al 2021; Mattson & Mobarak 2023)

Community-level experiments on civilian-led security interventions rare

## We evaluate a common approach in Latin America: *Convivencia*

- Preventative, community-level approach that focuses on neighborhood problem-solving and dispute resolution
- State-led
  - Tasks street-level bureaucrats with addressing community problems, managing local disputes and disorder, and tackling everyday problems
- But emphasizes building community capacity
  - Strengthening local organizations, improving lines of communication, encouraging participation, reshaping norms
- Partly designed to prevent disorder directly
- Could also increase order indirectly by enhancing state legitimacy



## TL;DR State-building is complicated

- To our surprise, intensifying state attention 10 to 20-fold had no average treatment effect on perceptions of state legitimacy or performance on average
- But there is suggestive evidence of divergent effects
  - Anticipating that impacts could diverge by neighborhood, we prespecified heterogeneity analyses by baseline levels of relative state governance
  - Where the state **began weak** → task force and city agencies worked sporadically → opinions of the state unchanged or worsened
  - Where the state **began strong** → liaisons and task force delivered → state legitimacy improved and crime and emergency calls fell
- Consistent with increasing returns to investments in state capacity

# Outline

Introduction

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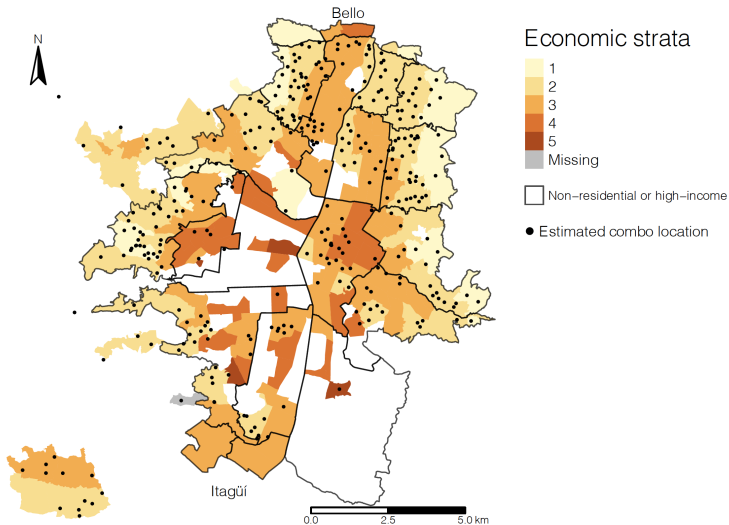
Conclusions

# Medellín, Colombia's industrial and commercial heartland



# Most residential neighborhoods have a longstanding drug-selling gang called a *combo*

- About 350 in all
- Existed for decades
- Well-defined borders
- Provide local governance services, dispute resolution, enforce property rights, etc.



Some combos provide order and seek legitimacy, partly to protect their members and drug rents



# State and combo legitimacy, barrio survey averages, 2019

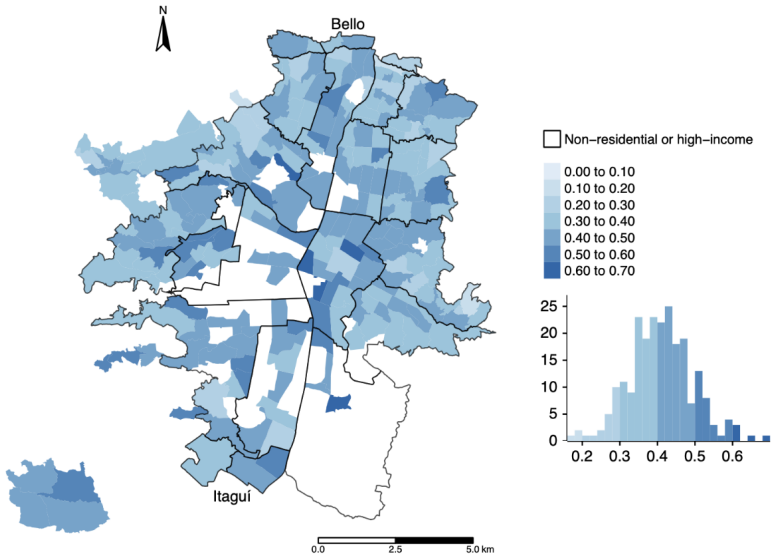
	Frequency/Rate (0-1 Scale)				Relative State – Combo	
	State		Combo		City-wide survey	Experimental control group
	Estimate (1)	SD (2)	Estimate (3)	SD (4)	(5)	(6)
Legitimacy Index	0.58	0.21	0.43	0.28	0.13	0.13
When solving problems in the neighborhood:						
How much do you trust the...	0.57	0.30	0.36	0.36	0.19	0.20
How fair is the...	0.55	0.27	0.41	0.35	0.11	0.12
How do you rate the...	0.60	0.22	0.51	0.28	0.09	0.09
How would your neighbors rate the ...	0.59	0.23	0.50	0.29	0.09	0.08
How much do your neighbors trust the...	0.57	0.28	0.47	0.36	0.09	0.06

Measurement error survey experiment

# State and combo security & governance, barrio survey averages, 2019

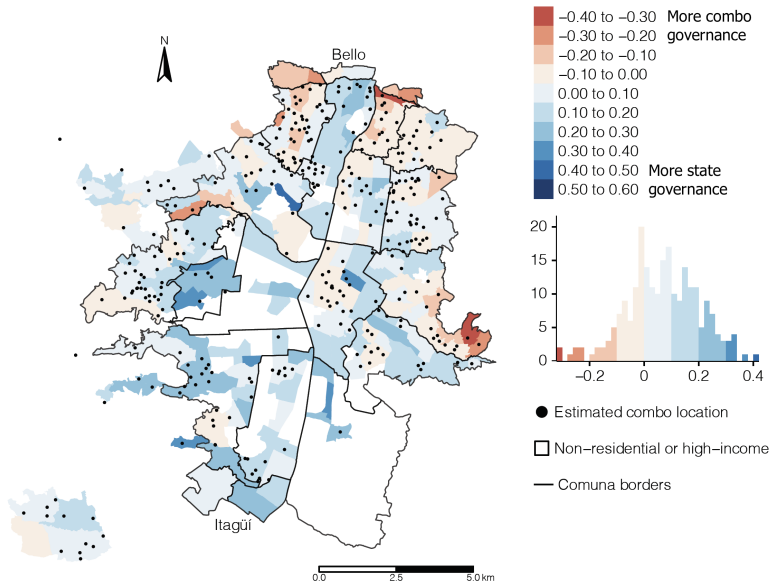
	Frequency/Rate (0-1 Scale)				Relative State – Combo	
	State		Combo		City-wide survey	Experimental control group
	Estimate (1)	SD (2)	Estimate (3)	SD (4)	(5)	(6)
Governance Index	0.41	0.26	0.34	0.29	0.07	0.07
How often they intervene when:						
HH: Someone is making noise	0.43	0.38	0.19	0.30	0.23	0.26
HH: Home improvements affect neighbors	0.41	0.38	0.25	0.34	0.16	0.14
HH: There is domestic violence	0.51	0.37	0.35	0.37	0.15	0.15
HH: Two drunks fight on the street	0.54	0.36	0.40	0.37	0.13	0.13
Biz: Someone disturbs a business	0.50	0.38	0.36	0.38	0.12	0.16
Biz: You have to react to a robbery	0.52	0.37	0.40	0.39	0.11	0.12
Biz: It is necessary to prevent a theft	0.45	0.37	0.38	0.39	0.07	0.08
Biz: Businesses in this sector are robbed	0.42	0.39	0.35	0.38	0.05	0.07
HH: People smoking marijuana near children	0.29	0.36	0.25	0.36	0.04	0.03
HH: A car or motorbike is stolen	0.46	0.37	0.43	0.38	0.04	-0.01
HH: Someone is threatening someone else	0.42	0.36	0.41	0.37	0.01	-0.01
HH: You have to react to a robbery	0.46	0.36	0.45	0.38	0.01	-0.02
HH: Someone is mugged on the street	0.39	0.36	0.41	0.38	-0.01	-0.05
HH: It is necessary to prevent a theft	0.40	0.36	0.42	0.38	-0.03	-0.04
HH: Kids fight on the street	0.29	0.35	0.32	0.37	-0.04	-0.03
Biz: Someone does not want to pay a debt	0.17	0.31	0.23	0.35	-0.06	-0.05
HH: Someone refuses to pay a big debt	0.22	0.31	0.39	0.38	-0.16	-0.20

# State protection services vary widely across city





# And state not the dominant provider of protection in all barrios



# Outline

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# Operación Convivencia

Identified 80 small neighborhoods (5–10 city blocks of 2000–3000 people)

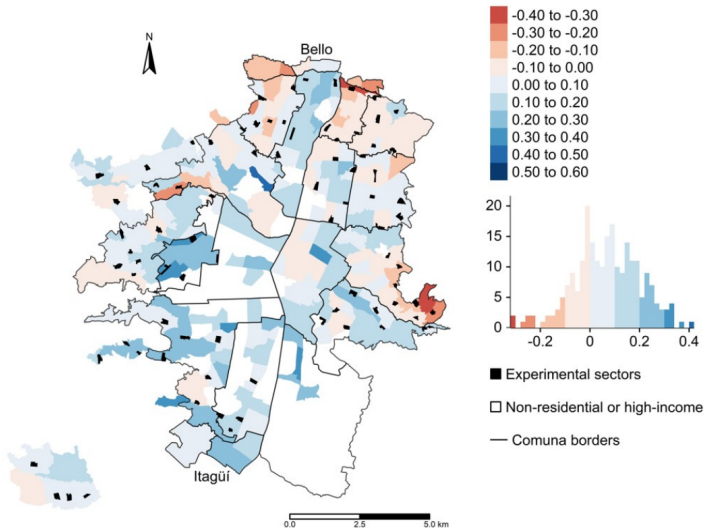
Representativeness of sample

Minimum 250 meters distant from one another

Spillover tests

Randomized 40 into treatment via matched pair design

Balance



# What does intensifying state services do to perceptions of state legitimacy and responsiveness?

Intensify municipal attention 10–20-fold for 20 months:

1. Central task force to ensure basic services are delivered:
  - Civilian dispute resolution and family service officers
  - Meetings with city officials and police commanders, known as *Consejos de convivencia*
  - Lights, garbage, equipment
2. Hire a full-time liaison for each community who:
  - Rejuvenates community responses to local problems
  - Links people to city agencies
  - Identifies needs for the task force
  - Convenes and organizes the *Consejos de convivencia*
  - Educates public on police and municipal responsibilities and services

## Widespread perceptions of municipal state absence, unresponsive police, and limited understanding of municipal services

*“Some of these sectors are like forgotten places, where institutional presence is lacking. So, there were situations or issues that could be addressed, and the community realized that things could obviously be done differently, because not everything can be handled by the combo.”*

Additional qualitative quotes



# Intervention attempts to intensify normal municipal attention

- Street-level staff
  - Hired 40 liaisons for this experimental evaluation
  - Normally city employs 1 liaison per 500 blocks
- *Consejos de Convivencia*
  - One per sector per semester
  - Normally there is one per comuna per year
- Increased attention from central task force



Figure: Educating community on the “police code”

# Does this affect state legitimacy and relative service provision?

- Liaisons do not directly engage in dispute resolution or disorder
- But they encourage local groups to tackle local disorder, and provide conflict resolution skills training
- They also marshal arms of the government that manage disputes and disorder
- Also focus on police-community communication



**Figure:** *Caravanas de Convivencia*: Week-long street fairs in each community

# Primary outcome 1: Relative state legitimacy

Does 20 months of intensive attention & communication enhance trust & satisfaction with state?

	Frequency/Rate (0-1 Scale)				Relative State – Combo	
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# Primary outcome 2: Relative state governance

Does this (indirectly) impact perceived state responsiveness to crime and disorder?

	Frequency/Rate (0-1 Scale)				Relative State – Combo	
	State		Combo		City-wide survey	Experimental control group
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# But first, a puzzle: No evidence that residents noticed the intervention on average

	Control Group Mean (1)	ATE Estimate [p-value] (2)
Index of first-stage variables (0-1)	0.33	0.010 [0.286]
Attended public events carried by State, binary	0.21	-0.002 [0.459]
Knew about public events carried by State, binary	0.52	0.031 [0.230]
Attended community events, binary	0.10	-0.012 [0.227]
Knew about community events, binary	0.30	-0.037* [0.084]
Saw mayoral employees in sector, binary	0.61	0.049** [0.042]
Interacted with mayoral employees in sector, binary	0.24	0.022 [0.149]

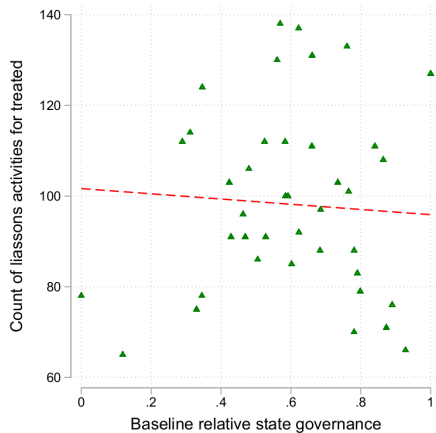
# But we prespecified heterogeneity analysis by baseline relative state governance, and find divergent responses

	Control Group Mean	Specification of treatment effect			
		ATE	Above median	Below median	Difference
		Estimate [p-value]	Estimate [p-value]	Estimate [p-value]	Estimate [p-value]
	(1)	(2)	(3)	(4)	(5)
Index of first-stage variables (0-1)	0.33	0.010 [0.286]	0.052** [0.013]	-0.038* [0.055]	0.090*** [0.002]
Attended public events carried by State, binary	0.21	-0.002 [0.459]	0.033 [0.121]	-0.041 [0.121]	0.074* [0.052]
Knew about public events carried by State, binary	0.52	0.031 [0.230]	0.106** [0.032]	-0.054 [0.180]	0.159** [0.028]
Attended community events, binary	0.10	-0.012 [0.227]	0.007 [0.382]	-0.034* [0.072]	0.041 [0.116]
Knew about community events, binary	0.30	-0.037* [0.084]	0.018 [0.273]	-0.097** [0.014]	0.115** [0.017]
Saw mayoral employees in sector, binary	0.61	0.049** [0.042]	0.090** [0.035]	0.003 [0.460]	0.086* [0.070]
Interacted with mayoral employees in sector, binary	0.24	0.022 [0.149]	0.052* [0.057]	-0.009 [0.546]	0.061* [0.062]

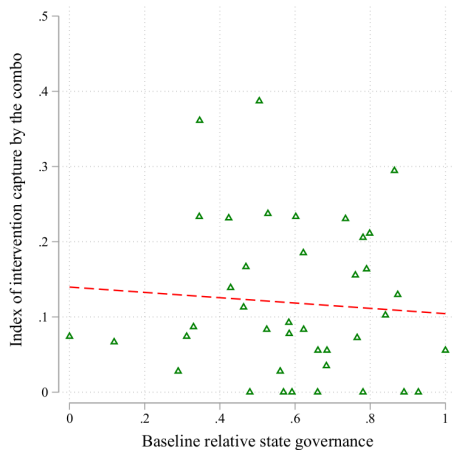
# Not a liaison compliance issue

No evidence that liaisons logged less time or fewer activities, or that combos responded differentially

(a) *Count of treatment activities*

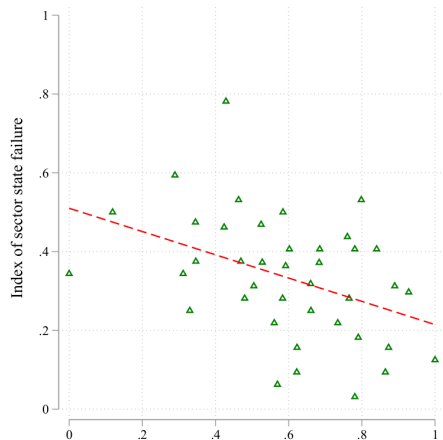


(c) *Instances of combo interference and capture*



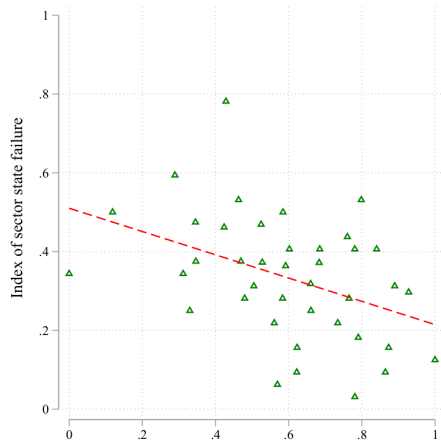
But we do see qualitative and quantitative evidence that, where the state began weak, it failed to deliver

(b) *Failed promises of the wider state apparatus*



## But we do see qualitative and quantitative evidence that, where the state began weak, it failed to deliver

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*"I managed to gather more than 60 people for the Council of Coexistence, but no one from the city showed up."*

*"The [dispute resolution officer] never came up to Olaya Herrera all the time I was there. And he never gave us an answer to why he did not."*

*"The police have very little credibility. I had a police station near my territory and, honestly, I rarely saw the Police come in here."*

*"It's very difficult to talk to people about the rules when they are witnessing a different behavior from police in practice."*

Thus, no evidence of impacts on primary outcome (on average)

---

Dependent variable	ATE	
	Control Mean	Estimate [p-value]
	(1)	(2)
Relative state legitimacy index	0.13	0.016 [0.278]
State legitimacy index	0.57	0.013 [0.135]
Combo legitimacy index	0.44	-0.002 [0.448]
Relative state governance index	0.07	-0.025 [0.124]
State governance index	0.41	-0.012 [0.187]
Combo governance index	0.35	0.011 [0.268]

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# But suggestive evidence of divergent results by initial state capacity

Dependent variable	Control Mean (1)	ATE Estimate [p-value] (2)	Het. by baseline rel. gov.		
			Above median	Below median	Diff.
			Estimate [p-value] (3)	Estimate [p-value] (4)	Estimate [p-value] (5)
Relative state legitimacy index	0.13	0.016 [0.278]	0.050* [0.084]	-0.021 [0.330]	0.071 [0.111]
State legitimacy index	0.57	0.013 [0.135]	0.033** [0.022]	-0.010 [0.279]	0.043** [0.024]
Combo legitimacy index	0.44	-0.002 [0.448]	-0.015 [0.293]	0.012 [0.390]	-0.027 [0.281]
Relative state governance index	0.07	-0.025 [0.124]	-0.018 [0.294]	-0.033 [0.138]	0.015 [0.354]
State governance index	0.41	-0.012 [0.187]	-0.006 [0.390]	-0.018 [0.171]	0.013 [0.310]
Combo governance index	0.35	0.011 [0.268]	0.010 [0.372]	0.012 [0.304]	-0.002 [0.469]

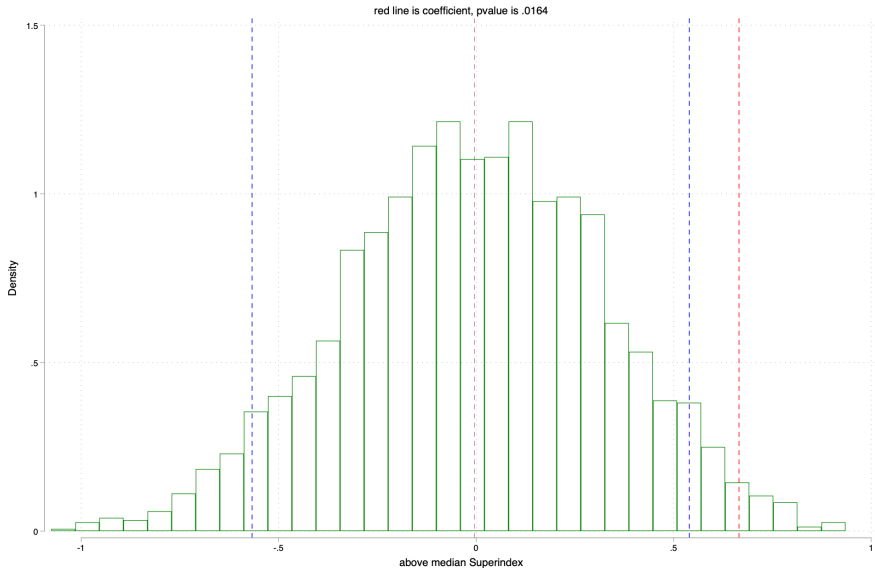
## We see similar patterns in emergency calls (125m radius)

Dependent variable	Control Mean (SD) (1)	ATE Estimate (SE) [p-value] (2)	Het. by baseline rel. gov.		
			Above median	Below median	Difference
			Estimate (SE) [p-value] (3)	Estimate (SE) [p-value] (4)	Estimate (SE) [p-value] (5)
Security-related emergency calls	135.75	-34.969** [0.028]	-63.250** [0.011]	-3.519 [0.902]	-59.731** [0.044]
Physical altercations	93.40	-18.414** [0.038]	-35.583*** [0.006]	0.678 [0.961]	-36.261** [0.039]
Narcotics related incidents	30.90	-15.870* [0.068]	-24.909* [0.091]	-5.819 [0.727]	-19.090 [0.255]
Armed incidents	11.45	-0.684 [0.327]	-2.758 [0.105]	1.622 [0.582]	-4.381* [0.093]
Knife related incidents	9.25	-0.968 [0.201]	-2.772** [0.037]	1.038 [0.628]	-3.810* [0.051]
Firearm related incidents	2.20	0.284 [1.358]	0.014 [1.480]	0.584 [0.700]	-0.570 [0.362]

## And similar patterns for reported crime (125m radius)

Dependent variable	Control Mean (1)	ATE Estimate [p-value] (2)	Het. by baseline rel. gov.		
			Above median	Below median	Diff.
			Estimate [p-value] (3)	Estimate [p-value] (4)	Estimate [p-value] (5)
Sentence-weighted crime index	0.35	-0.061* [0.066]	-0.137** [0.024]	0.023 [0.691]	-0.160** [0.026]
Homicides	0.04	0.029 [1.025]	0.025 [1.114]	0.032 [0.206]	-0.007 [0.413]
Vehicle thefts	0.33	-0.040 [0.231]	-0.123* [0.090]	0.053 [0.534]	-0.176* [0.056]
Thefts and robbery	1.44	-0.463** [0.030]	-0.886** [0.020]	0.009 [0.969]	-0.895** [0.034]
Assaults	0.64	-0.104** [0.037]	-0.146** [0.046]	-0.057 [0.546]	-0.089 [0.230]

# Results robust to a family index of all primary and secondary measures



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## Sobering, unexpected absence of average effects

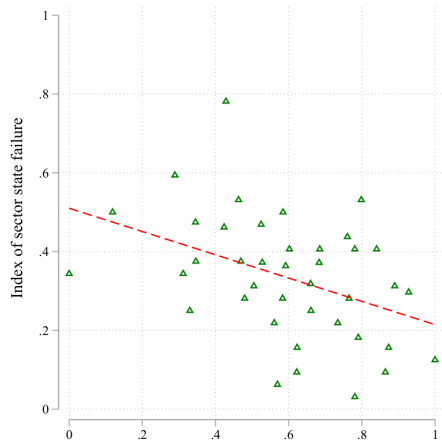
- Massive intensification of street presence and service delivery relative had no effect on average perceptions of the state
- As impacts on security and order are indirect, perhaps not overly surprising
- Far more surprising that there was no effect on state legitimacy

*“Community members expressed things like: ‘We had never been this close to anyone in authority before.’ The direct relationship with the government was nonexistent. ... They were very grateful for it; they welcomed us warmly into the community. It was an opportunity to show them different ways of doing things that they were completely unaware of.”*

# Suggestive evidence that state capacity to deliver matters

Potentially a case of raised but unmet expectations

(b) *Failed promises of the wider state apparatus*



*"I managed to gather more than 60 people for the Council of Coexistence, but no one from the city showed up."*

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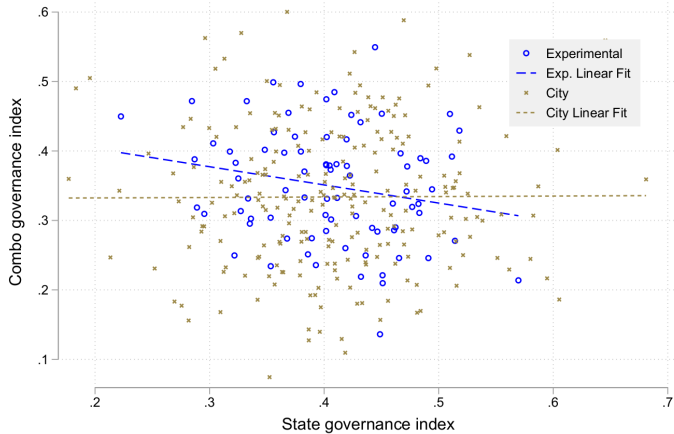
*"It's very difficult to talk to people about the rules when they are witnessing a different behavior from police in practice."*

## One possible implication: Increasing returns to state presence

- Returns to initial investment in state capacity could be initially low, and increasing thereafter
- If true, would imply bureaucrats have incentives to invest in places that already have some local state capacity
- Such a “neglect trap” may drive the bifurcation of developing cities into well-served functional areas and largely abandoned informal zones.



# Comparison of the experimental and city (representative) sample of blocks in 2019: State and combo governance levels



# Baseline summary statistics and balance test

Covariate	Means		Regression Difference	
	Control	Treated	Coeff	RI p-value
Additive index of combo presence and governance	0.00	-0.02	-0.02	0.43
Baseline - Combo Governance Index (Relative to State)	0.00	-0.02	-0.02	0.43
Standardized index of perceived insecurity and drugs	0.06	-0.07	-0.13	0.16
Index of crime	0.09	-0.12	-0.21	0.00***
Index of distance from public goods and services	-0.14	0.14	0.28	0.11
Respondent age between 18 and 25	0.19	0.19	-0.00	0.49
Respondent age between 26 and 40	0.29	0.31	0.01	0.26
Respondent age between 41 and 64	0.39	0.37	-0.01	0.27
Respondent is business owner	0.20	0.20	0.00	0.45
Multidimensional Poverty Index (2018)	14.36	17.30	2.94	0.10*
Block Longitude	-75.58	-75.58	-0.01	0.20
Block present in 1970	0.50	0.44	-0.06	0.26
Median age (2005)	27.21	26.31	-0.91	0.18
Total women (2005)	133.79	142.04	8.25	0.29
Total non-mestizo population (1993)	0.53	0.61	0.08	0.33
Median age (1993)	24.16	24.71	0.56	0.27
Share of women (1993)	0.53	0.52	-0.01	0.35
Distance to the respective region headquarters (100 meters)	17.38	19.62	2.24	0.35

## No evidence of treatment spillovers onto blocks within 250m radius

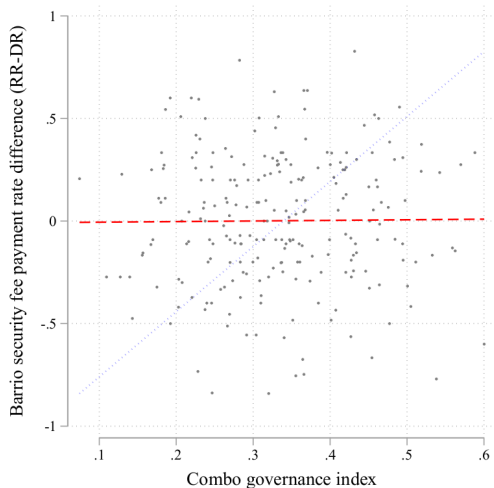
	Treatment Estimate (1)	P-value (2)	0m-250m Spillover Estimate (3)	P-value (4)
Relative State Governance Index	-0.031	0.121	-0.067	0.919
State Governance Index (0-1)	-0.015	0.232	-0.030	0.946
Combo Governance Index (0-1)	0.014	0.378	0.031	0.869
Relative State Legitimacy Index	0.006	0.889	-0.051	0.706
State Legitimacy Index (0-1)	0.011	0.341	-0.011	0.583
Combo Legitimacy Index (0-1)	0.006	0.776	0.036	0.847

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# Randomization balance within prespecified subgroups

Covariate	High relative state gov.				Low relative state gov.			
	Control mean	Treatment mean	Coeff	p-value	Control mean	Treatment mean	Coeff	p-value
<i>Baseline indices used for matching , main control vector</i>								
Additive index of combo presence and governance	-0.57	-0.63	-0.06	0.764	0.59	0.61	0.03	0.932
Baseline - Combo Governance Index (Relative to State)	-0.69	-0.75	-0.06	0.718	0.70	0.72	0.02	0.950
Standardized index of perceived insecurity and drugs	0.07	-0.07	-0.14	0.654	0.05	-0.06	-0.11	0.738
Index of crime	0.01	-0.17	-0.18	0.535	0.17	-0.06	-0.23	0.493
Index of distance from public goods and services	-0.21	0.17	0.39	0.268	-0.06	0.10	0.16	0.563
<i>Other baseline covariates</i>								
Respondent age between 18 and 25	0.18	0.18	-0.00	0.852	0.20	0.21	0.00	0.891
Respondent age between 26 and 40	0.26	0.31	0.05	0.103	0.33	0.30	-0.02	0.457
Respondent age between 41 and 64	0.42	0.36	-0.05*	0.083	0.35	0.38	0.03	0.452
Respondent is business owner	0.20	0.20	0.00	0.122	0.20	0.19	-0.00	0.225
Multidimensional Poverty Index (2018)	11.75	12.93	1.19	0.645	16.98	21.73	4.75	0.171
Block Longitude	-75.59	-75.59	-0.00	0.934	-75.57	-75.58	-0.01	0.225
Block present in 1970	0.60	0.51	-0.09	0.479	0.40	0.38	-0.03	0.846
Median age (2005)	29.19	27.61	-1.58	0.315	25.18	24.96	-0.22	0.869
Total women (2005)	135.53	142.93	7.40	0.696	132.15	141.12	8.96	0.619
Total non-mestizo population (1993)	0.58	0.20	-0.38*	0.095	0.49	1.04	0.55**	0.032
Median age (1993)	25.80	26.42	0.62	0.702	22.49	22.96	0.47	0.692
Share of women (1993)	0.52	0.51	-0.00	0.855	0.54	0.53	-0.01	0.603
Distance to the respective region headquarters (100 meters)	17.86	23.49	5.63	0.456	16.69	14.62	-2.07	0.528

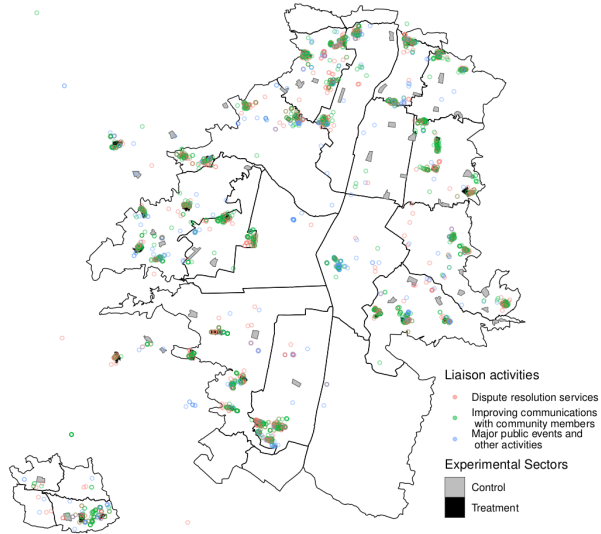
# Difference between randomized response (RR) and direct response (DR) to survey questions on combo “security fee” payment



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# City government and liaison activities by experimental sector

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# Count of officially-logged liaison activities per sector

Dependent variable	Control Mean (SD)	ATE  Estimate (SE)	Het. by baseline rel. gov.		
			Above median	Below median	Diff.
			Estimate (SE)	Estimate (SE)	Estimate (SE)
			(3)	(4)	(5)
N. activities in sector area	0.23 (0.53)	35.590*** (3.029)	28.285*** (4.159)	42.235*** (4.152)	-13.950** (5.851)
N. activities in 125m sector buffer area	1.88 (4.75)	70.412*** (2.564)	65.718*** (3.576)	75.499*** (3.570)	-9.780* (5.031)

## Liaisons emphasized pre-existing lack of awareness of state services

*"Some people didn't know what the 'Casa de Justicia' is, or what the 'Comisaria de Familia' does, or that there's the possibility of free conciliation in a Conciliation Center. So, when they use that strategy, it also generates a certain trust."*

*"Community members expressed things like: 'We had never been this close to anyone in authority before.' The direct relationship with the government was nonexistent. ... They were very grateful for it; they welcomed us warmly into the community. It was an opportunity to show them different ways of doing things that they were completely unaware of."*

*"When they have a problem that requires calling the police, since they believe they live in Laureles, they call the Laureles Police Station. However, the officers at the Laureles Police Station tell them, 'That's not our jurisdiction.' ...Or the community inquires about the [dispute resolution office] in Santa Monica, but they're told, 'That has nothing to do with us...' So, the community ends up not calling anywhere."*



# Program impacts on police and mayor's office legitimacy components

Dependent variable	Control Mean (SD)	ATE  Estimate (SE)	Het. by baseline rel. gov.		
			Above median	Below median	Diff.
			Estimate (SE)	Estimate (SE)	Estimate (SE)
	(1)	(2)	(3)	(4)	(5)
Police legitimacy index	0.57 (0.23)	0.006 (0.008)	0.032*** (0.011)	-0.022** (0.010)	0.054*** (0.014)
How much do you trust the police	0.56 (0.34)	0.002 (0.011)	0.034** (0.013)	-0.032** (0.015)	0.066*** (0.019)
How fair is the police	0.57 (0.30)	-0.006 (0.009)	0.007 (0.012)	-0.019 (0.015)	0.026 (0.019)
How do you rate the police	0.59 (0.24)	0.007 (0.009)	0.032*** (0.012)	-0.019* (0.011)	0.051*** (0.016)
How would your neighbors rate the police	0.59 (0.26)	0.016* (0.009)	0.037*** (0.012)	-0.006 (0.012)	0.043** (0.016)
How much do your neighbors trust the police	0.57 (0.32)	0.013 (0.011)	0.057*** (0.014)	-0.034*** (0.013)	0.091*** (0.019)

# Program impacts on police and mayor's office legitimacy components

Mayor legitimacy index	0.57 (0.23)	0.012 (0.008)	0.026** (0.012)	-0.003 (0.012)	0.028 (0.018)
How much do you trust the mayoral staff	0.57 (0.33)	0.004 (0.011)	0.018 (0.015)	-0.011 (0.017)	0.029 (0.023)
How fair is the mayoral staff	0.53 (0.31)	0.006 (0.011)	0.022 (0.016)	-0.010 (0.017)	0.032 (0.024)
How do you rate the mayoral staff	0.61 (0.25)	0.003 (0.010)	0.017 (0.013)	-0.012 (0.014)	0.030 (0.019)
How would your neighbors rate the mayoral staff	0.59 (0.27)	0.019* (0.010)	0.019 (0.014)	0.018 (0.015)	0.001 (0.020)
How much do your neighbors trust the mayoral staff	0.55 (0.32)	0.033*** (0.011)	0.047** (0.019)	0.018 (0.012)	0.029 (0.023)

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# Program impacts on police and mayor's office legitimacy components

Combo legitimacy index	0.44 (0.28)	-0.006 (0.014)	-0.022 (0.017)	0.011 (0.023)	-0.033 (0.029)
How much do you trust the combo	0.36 (0.36)	0.003 (0.017)	-0.012 (0.018)	0.018 (0.029)	-0.030 (0.033)
How fair is the combo	0.41 (0.34)	-0.001 (0.016)	-0.033 (0.023)	0.034 (0.022)	-0.067** (0.033)
How do you rate the combo	0.50 (0.27)	0.001 (0.013)	-0.015 (0.015)	0.018 (0.021)	-0.033 (0.027)
How much do your neighbors trust the combo	0.51 (0.30)	-0.010 (0.014)	-0.031* (0.017)	0.011 (0.022)	-0.042 (0.028)
How would your neighbors rate the combo	0.48 (0.36)	-0.011 (0.017)	-0.027 (0.025)	0.007 (0.025)	-0.034 (0.035)

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# Program impacts on relative state governance components

Dependent variable	Control Mean (SD)	ATE Estimate (SE)	Het. by baseline rel. gov.		
			Above median	Below median	Diff.
			Estimate (SE)	Estimate (SE)	Estimate (SE)
	(1)	(2)	(3)	(4)	(5)
Relative state governance index (less police related)	0.09 (0.31)	-0.020 (0.012)	-0.013 (0.016)	-0.026* (0.016)	0.013 (0.021)
HH: Someone is making noise	0.26 (0.42)	-0.025 (0.020)	-0.021 (0.029)	-0.028 (0.028)	0.006 (0.040)
HH: Home improvements affect neighbors	0.14 (0.44)	-0.007 (0.023)	0.005 (0.033)	-0.017 (0.032)	0.022 (0.046)
HH: There is domestic violence	0.15 (0.45)	-0.014 (0.023)	0.029 (0.033)	-0.052 (0.032)	0.080* (0.046)
HH: Two drunks fight on the street	0.13 (0.45)	-0.018 (0.023)	0.004 (0.033)	-0.037 (0.032)	0.041 (0.046)
Biz: Someone disturbs a business	0.16 (0.50)	-0.066 (0.050)	-0.030 (0.070)	-0.103 (0.070)	0.072 (0.099)
HH: People smoking marijuana near children	0.03 (0.40)	0.004 (0.020)	0.029 (0.028)	-0.019 (0.028)	0.048 (0.039)
HH: Kids fight on the street	-0.03 (0.41)	-0.024 (0.021)	-0.010 (0.031)	-0.037 (0.029)	0.027 (0.042)
Biz: Someone does not want to pay a debt	-0.05 (0.33)	-0.016 (0.037)	0.013 (0.052)	-0.036 (0.051)	0.049 (0.073)
HH: Someone refuses to pay a big debt	-0.20 (0.45)	-0.033 (0.024)	-0.007 (0.035)	-0.055 (0.034)	0.048 (0.048)

# Program impacts on relative state governance components

Relative state governance index (more police related)	0.02 (0.39)	-0.029* (0.018)	-0.011 (0.026)	-0.049** (0.023)	0.038 (0.034)
Biz: You have to react to a robbery	0.12 (0.48)	-0.083* (0.050)	-0.121* (0.069)	-0.045 (0.071)	-0.076 (0.099)
Biz: It is necessary to prevent a theft	0.08 (0.52)	-0.078 (0.049)	-0.071 (0.069)	-0.086 (0.071)	0.016 (0.098)
Biz: Businesses in this sector are robbed	0.07 (0.50)	-0.065 (0.048)	-0.071 (0.070)	-0.060 (0.067)	-0.011 (0.097)
HH: A car or motorbike is stolen	-0.01 (0.45)	0.010 (0.023)	0.049 (0.033)	-0.029 (0.033)	0.077* (0.046)
HH: Someone is threatening someone else	-0.01 (0.45)	-0.023 (0.024)	0.020 (0.034)	-0.060* (0.033)	0.079* (0.047)
HH: You have to react to a robbery	-0.02 (0.47)	-0.023 (0.023)	0.018 (0.033)	-0.061* (0.032)	0.079* (0.046)
HH: Someone is mugged on the street	-0.05 (0.42)	0.006 (0.022)	0.037 (0.031)	-0.022 (0.031)	0.058 (0.044)
HH: It is necessary to prevent a theft	-0.04 (0.48)	-0.018 (0.023)	0.017 (0.033)	-0.053 (0.033)	0.069 (0.046)

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# Impacts of treatment on survey measures of police, mayoral, and combo efficacy

Dependent variable	Control Mean (SD) (1)	ATE Estimate (SE) (2)	Het. by baseline rel. gov.		
			Above median	Below median	Diff.
			Estimate (SE) (3)	Estimate (SE) (4)	Estimate (SE) (5)
Police efficacy index	0.55 (0.21)	-0.009 (0.009)	-0.007 (0.013)	-0.011 (0.010)	0.005 (0.016)
How easy is it to contact the police	0.54 (0.29)	-0.010 (0.010)	-0.005 (0.017)	-0.015 (0.009)	0.009 (0.019)
Perceived value of the police	0.71 (0.25)	0.002 (0.010)	-0.005 (0.016)	0.011 (0.010)	-0.016 (0.019)
How fast is the police	0.42 (0.34)	-0.018 (0.013)	-0.006 (0.013)	-0.030 (0.021)	0.024 (0.024)

# Impacts of treatment on survey measures of police, mayoral, and combo efficacy

Mayoral staff efficacy index	0.45 (0.20)	-0.010 (0.008)	-0.004 (0.013)	-0.016 (0.010)	0.012 (0.016)
How easy is it to contact mayoral staff	0.35 (0.30)	0.003 (0.011)	0.007 (0.017)	-0.002 (0.013)	0.009 (0.021)
Perceived value of the mayoral staff	0.66 (0.26)	-0.013 (0.009)	0.000 (0.014)	-0.028*** (0.008)	0.029* (0.016)
How fast is the mayoral staff	0.34 (0.31)	-0.010 (0.011)	0.001 (0.016)	-0.022 (0.015)	0.023 (0.021)

# Impacts of treatment on survey measures of police, mayoral, and combo efficacy

Combo efficacy index	0.55 (0.24)	-0.004 (0.012)	-0.007 (0.017)	0.000 (0.016)	-0.007 (0.024)
How easy is it to contact the combo	0.59 (0.31)	0.011 (0.016)	0.019 (0.018)	0.002 (0.025)	0.017 (0.030)
Perceived value of the combo	0.52 (0.32)	-0.014 (0.014)	-0.034** (0.016)	0.008 (0.023)	-0.042 (0.029)
How fast is the combo	0.56 (0.36)	0.002 (0.016)	-0.004 (0.025)	0.009 (0.019)	-0.013 (0.031)

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# Heterogeneity analysis by quartiles of relative baseline state governance

	(A) Subgroups by: <i>Relative</i> baseline governance		(B) Subgroups by: <i>Absolute</i> baseline governance	
	Dependent Variable: Relative governance (1)	Dependent Variable: Relative Legitimacy (2)	Dependent Variable: Relative governance (3)	Dependent Variable: Relative Legitimacy (4)
Program impacts:				
Q1 (0 <sup>th</sup> - 25 <sup>th</sup> quartile baseline rel. gov)	-0.025 (0.031)	-0.072* (0.038)	-0.058** (0.024)	-0.008 (0.037)
Q2 (25 <sup>th</sup> - 50 <sup>th</sup> quartile baseline rel. gov)	-0.039** (0.018)	0.020 (0.037)	-0.063*** (0.022)	-0.044* (0.026)
Q3 (50 <sup>th</sup> - 75 <sup>th</sup> quartile baseline rel. gov)	0.026 (0.026)	0.051 (0.033)	0.087*** (0.020)	0.127*** (0.046)
Q4 (75 <sup>th</sup> - 100 <sup>th</sup> quartile baseline rel. gov)	-0.067* (0.034)	0.052 (0.040)	-0.047 (0.037)	0.015 (0.041)
Differences relative to Q1:				
Q2	-0.014 (0.035)	0.093* (0.049)	-0.006 (0.033)	-0.036 (0.046)
Q3	0.051 (0.040)	0.123** (0.048)	0.145*** (0.030)	0.134** (0.056)
Q4	-0.042 (0.046)	0.124** (0.058)	0.011 (0.046)	0.023 (0.058)

## Conceptual framework

- Governance as a service for sale, with two main “firms”
- In a duopoly, if one provider (the state) exogenously provided more protection, it lowers the optimal amount the other provider (the gang) should offer
  - Captures conventional wisdom that criminals mainly govern in the absence of the state
- But what if state and combo governance are strategic complements?
  1. *Combo strategic response*: there are intrinsic or strategic benefits to rule (e.g. positive externalities on another business lines)
  2. *Growth*: State rule increases development, # of transactions, and demand for governance
- Which of these effects dominates is an empirical question

## Begin with Cournot competition with imperfect substitutes

- A gang  $g$  and a state  $s$  offer distinct but substitutable services in quantities  $q_g$  and  $q_s$
- Marginal cost of production is constant at  $c_i$
- Each organization  $i$ 's utility function as:

$$V_i = p_i q_i - c_i q_i$$

- Price is determined by a linear inverse demand curve:

$$p_i = a_i - \beta q_i - \gamma q_j$$

where  $\gamma \in (0, 1]$  implies the two services are substitutes, and  $\beta > 0$  for downward-sloping demand

## Duopolistic competition implies “crowding out”

- We are interested in whether gang rule is crowded in or out when there is an exogenous increase in state governance (i.e. not a fully specified model)
- We show that:

$$\frac{\partial q_g^*}{\partial q_s} = -\frac{\gamma}{2\beta}$$

So long as the two services are not complements, this comparative static implies that increases in one duopolist's supply of protection will reduce the other's

This will be true whether we model via Cournot, Bertrand, or an “Olsonian” public goods provision model with competing stationary bandits

# Caveat: May be externalities to other business lines

Blattman, Duncan, Lessing & Tobòn 2023

- Gang leaders described additional benefits to governing beyond the money it brings in as a business line
- We summarize these diverse motives by adding a stylized term to the players' objective functions:

$$V_i = p_i q_i - c_i q_i + \rho(q_i, q_j) \pi_i$$

where:

- $\pi_i$  is the return to control of the neighborhood, e.g.,  $\pi_g$  includes retail drug sales
- $\rho(\cdot)$  scales each organization's ability to enjoy these benefits, e.g., a contest success function

## These countervailing forces implies state rule could either crowd in or crowd out gang rule

- The elasticity of gang governance to state governance now becomes:

$$\frac{\partial q_g^*}{\partial q_s} = \frac{\lambda \pi_g - \gamma}{2\beta - \delta \pi_g}$$

$\lambda = \frac{\partial^2 \rho(q_g, q_s)}{\partial q_g \partial q_s}$  is the cross-partial derivative between gang and state governance  
> 0 if gang has more-than-proportional returns to raising rule in response to state

$\delta = \frac{\partial^2 \rho(q_g, q_s)}{\partial q_g \partial q_g}$  reflects the rate of increasing ( $\delta > 0$ ) or decreasing returns ( $\delta < 0$ ) to gang rule

## 3 cases in which state governance could crowd gangs in

1. Strategic response to state rule by the combo ( $\lambda\pi_g > \gamma$ )
  - When drug rents  $\pi_g$  are large, substitutability  $\gamma$  is low, and when gang rule is especially effective at winning neighborhood control/loyalty ( $\lambda$  high)
2. Increasing returns to a gang's own level of governance ( $\delta\pi_g > 2\beta$ )
  - Could arise if residents reward gang rule with loyalty at increasing rates ( $\delta > 0$ ), given downward-sloping demand ( $\beta > 0$ )
3. State rule increases general demand for governance
  - Outside of  $\rho(\cdot)\pi_i$ , there may be endogenous demand for protection
  - In the Cournot example, we would have endogenous growth if inverse demand  $a_i$  is an increasing function of  $q_s$