The Effect of Political Constraints on State Capacity Building: Evidence from a Land Allocation Program in Mexico

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IV Congreso de Economía Colombiana

September 25, 2014

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3. Empirical approach and results
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   - Ejido distance to municipality head as state capacity
   - State capacity building and political competition
   - Robustness concerns and alternative explanations

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  - P_g cost of providing public goods.
  - For a party with comparative advantage in providing particularistic transfers, reducing P_g (our definition of state capacity) hurts his comparative advantage.
  - $\rightarrow$ **Clientelistic parties oppose state capacity building when it is** *more* **likely that they will be challenged by opposition ($\downarrow \alpha$).**

Our empirical strategy

- Study whether the Partido *Revolucionario Institucional* (PRI) created conditions to preempted local state capacity building via ejido allocation, especially in areas where it expected stronger political competition.

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- **Why 1960?** Before 1960 the PRI faced essentially no competition, and since the early 1960s it started facing political competition differentially across the country.
- **Why distance of ejidos?** Location is key to establish cost of providing public goods - hence a measure of state capacity.

Contents

Land Redistribution

- After the Mexican revolution, few decrees and the 1917 constitution established the distribution of land to communities.

- Distribution of land took the form of ejidos or agrarian communities.

- Communities requested land as a whole to governor, who could either reject or conditionally approve their petitions.

- Final approval depended first on the national agrarian commission and ultimately the **president**.

Distribution of ejidos over time
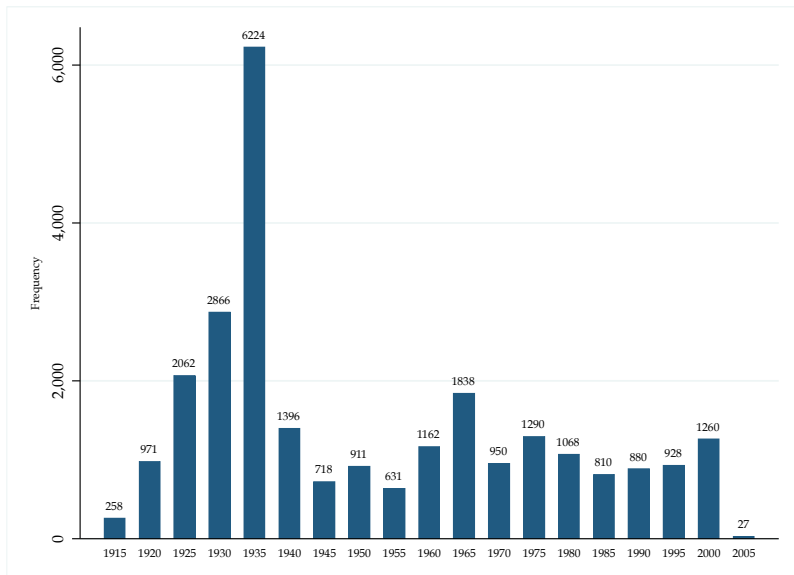
Ejidos are more than half of agricultural land in Mexico
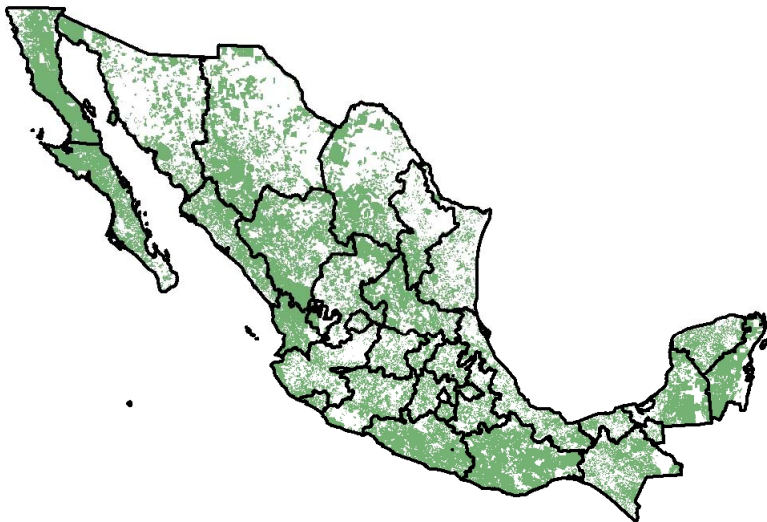
Land Redistribution and Clientelism

- Legislation also established the "democratically elected" office of the commissariat to administer each communal land.

- Commissariats access and distribute government programs to the peasants in their communities.

- This internal organization, together with the PRI's corporativist apparatus, facilitated the development of clientelistic networks in communal lands by the PRI (Larreguy, 2013).

The 60s as breaking point of the PRI's hegemony

- Around 1960 several sectors in the Mexican society exhibit discontent with the PRI's policies, while the PRI started to face effective political competition (Bartra, 1985; Lujambio, 2001).

- Factions of miners, railway workers, and teachers engaged in marches, strikes, and rallies (Calderón & Cedillo, 2012).

- During the 1960s student movements proliferated in at least one-third of the nation (Calderón & Cedillo, 2012).

- Guerrilla groups proliferated among peasants all throughout Mexico (Calderón & Cedillo, 2012).

- 5 highly competitive elections around 1960: Baja California, Chihuahua, San Luis Potosi, Sonora and Yucatan (Bezdek, 1973).

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Data

- Mapping of *ejidos* to localities with spatial data from *Programa de Certificación de Derechos Ejidales y Titulación de Solares*, PROCEDE.

- Spatial data on the location of localities, and municipality heads from INEGI

- Data on the creation dates of *ejidos* from *Padrón e Historial de Núcleos Agrarios*, PHINA.

- Election data from *Base de datos BANAMEX-CIDAC*, and electoral institutes of all states.

- 2000 census data from *Instituto Nacional de Estadística y Geografía*, INEGI.

Contents

Distance and state capacity

- Distance is a key choice variable related to state capacity - the cost of providing public goods.

  "The greatest difficulties (...) concern the distribution of a large share of its population in rural localities of under 5 thousand and 2 thousand 500 inhabitants, which are dispersed and many of them in areas of rough topography and distant from highways and roads, far away from the power-generating centers and municipality heads."[1]

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[1] Situación del desarrollo social en Baja California, Baja California: Secretaría de Desarrollo Social.

Distance and state capacity - Evidence

- Mexico has approximately 200,000 localities organized in approximately 2,400 municipalities.

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$$y_{\ell,m} = \alpha + \beta \cdot \text{distance}_{\ell,m} + \eta_m + \varepsilon_{\ell,m}$$

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  - η_m are municipal fixed effects.

Establishing Our Measure of State Capacity

Table: State Capacity on Distance: *Full Set of Localities*

	Piped Water	Drainage	Electricity
	(1)	(2)	(3)
Distance to Mun. Head	-0.0652***	-0.1031***	-0.0721***
	(0.0039)	(0.0029)	(0.0041)
Municipality Fixed Effets	✓	✓	✓
Observations	107,218	107,218	107,218
R^2	0.2855	0.3905	0.3040

Robust standard errors in parentheses clustered at municipality level, *** p<0.01, ** p<0.05, * p<0.1.

Establishing Our Measure of State Capacity (Cont.)

Table: State Capacity on Distance: *Localities that Overlap with Ejidos*

	Piped Water	Drainage	Electricity
	(1)	(2)	(3)
Distance to Mun. Head	-0.0396***	-0.0755***	-0.0622***
	(0.0070)	(0.0046)	(0.0078)
Municipality Fixed Effets	✓	✓	✓
Observations	41,006	41,006	41,006
R^2	0.3127	0.4344	0.3708

Robust standard errors in parentheses clustered at municipality level, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

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Difference in differences strategy

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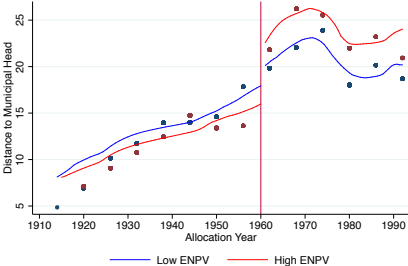 - how fragmented vote share is,
  - vote share for the PRI, and
  - PRI incumbency.

Graphical Analysis
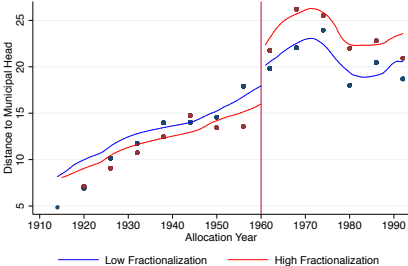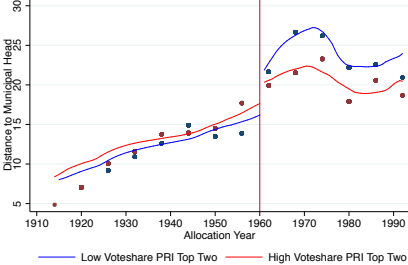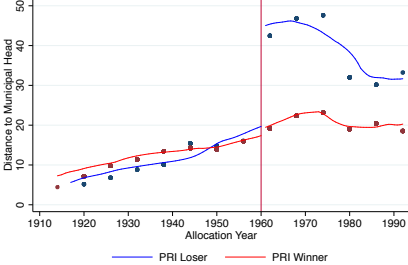
Empirical Analysis
Baseline regression: Diff in Diff

- We run:

$$y_{e,m} = \alpha + \eta_m + pres_t + \gamma \cdot (Post1960_{e,m} \times PoliticalComp_m) + \varepsilon_{e,m}$$

- where
    - $y_{e,m}$ indicates the distance of *ejido e* to its municipality head,
    - $Post1960_{e,m}$ is an indicator variable that *ejido e* was created after 1960,
    - $PoliticalComp_m$ is a measure that captures the expected political competition in municipality *m*, and
    - η_m are municipal and $pres_t$ presidential term fixed effects.
- Standard errors are clustered at the municipal level.
- Our model's prediction is that $\gamma > 0$ ($\gamma < 0$) for measures $PoliticalComp_m$ that are increasing (decreasing) in competition.

Baseline Results

	(1)	(2)	(3)	(4)
Dep Var: Distance to Mun. Head				
Post1960 $\times$ Political Competition	0.1213***	0.3416***	-0.4225***	-0.2606***
	(0.0417)	(0.0977)	(0.1201)	(0.0948)
Size main effect (1 sd $\uparrow$ in pol comp)	0.0633	0.0696	-0.0745	-0.0685
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Observations	18,052	18,052	18,052	18,052
R^2	0.5789	0.5791	0.5792	0.5790

Robust standard errors in parentheses clustered at municipality level, *** p<0.01, ** p<0.05, * p<0.1.

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Robustness concerns

1. Analyze the validity of our identification assumption, i.e., that there are no differential trends across municipalities with different expected political competition.
   - Conduct a placebo dropping the data post 1960 and using 1935 instead to define post.
2. Concern that competition is proxy for some omitted variable.
   - Add a series of controls interacted with post: area, rain, air humidity, altitude, and soil humidity.
3. Concern we capture strength of rural elites.
   - Use historical data to control for extent of haciendas.
4. Concern we identify across state variation.
   - Control for state-specific trends.

Testing for pretrends
Placebo using Post 1935

	(1)	(2)	(3)	(4)
Dep Var: Distance to Mun. Head				
Post 1935 $\times$ Political Competition	-0.0361	-0.0634	-0.0369	-0.0298
	(0.0315)	(0.0804)	(0.0944)	(0.0751)
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Observations	12,585	12,585	12,585	12,585
R^2	0.5521	0.5521	0.5520	0.5520

Robust standard errors in parentheses clustered at municipality level, *** p<0.01, ** p<0.05, * p<0.1.

It includes Ejidal Grants from 1914 to 1960

Controlling for Differential Trends

	(1)	(2)	(3)	(4)
Dep Var: Distance to Mun. Head				
Post1960 × Competition	0.1411***	0.3456***	-0.4387***	-0.2521***
	(0.0361)	(0.0898)	(0.1048)	(0.0794)
Post1960 × Area	0.0974***	0.0936***	0.0975***	0.0946***
	(0.0180)	(0.0179)	(0.0177)	(0.0179)
Post1960 × Av. Rain	3.9693***	3.8250***	3.6719***	3.5050***
	(1.0805)	(1.0965)	(1.1118)	(1.1150)
Post1960 × Z-score rain	-0.0115	-0.0138	-0.0095	-0.0110
	(0.0205)	(0.0206)	(0.0207)	(0.0207)
Post1960 × Air Humidity	0.0029	0.0030	0.0034	0.0039*
	(0.0024)	(0.0024)	(0.0025)	(0.0024)
Post1960 × Altitude (mean)	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Post1960 × Altitude (sd)	0.0000	0.0000	-0.0000	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Post1960 × Soil Humidity (mean)	0.0005	0.0003	0.0008	0.0014
	(0.0061)	(0.0061)	(0.0061)	(0.0063)
Post1960 × Soil Humidity (sd)	0.0059	0.0038	0.0049	0.0052
	(0.0160)	(0.0158)	(0.0155)	(0.0152)
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Control stock land granted	✓	✓	✓	✓
Observations	17,987	17,987	17,987	17,987
R^2	0.5844	0.5843	0.5845	0.5842

Controlling for the Strength of Rural Elites

	(1)	(2)	(3)	(4)
Dependent Variable: Distance to Municipality Head				
Post1960 × Competition	0.1217***	0.3376***	-0.4052***	-0.2510***
	(0.0411)	(0.0968)	(0.1172)	(0.0909)
Post1960 × Ranchos & Haciendas	0.0003*	0.0003*	0.0002*	0.0002*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Observations	18,052	18,052	18,052	18,052
R-squared	0.5793	0.5794	0.5795	0.5794

Robust standard errors in parentheses clustered at municipality level, *** p<0.01, ** p<0.05, * p<0.1.

Adding state-specific trends

	(1)	(2)	(3)	(4)
Dep Var: Distance to Mun. Head				
Post 1960 × Political Comptition	0.1527***	0.4139***	-0.5294***	-0.2798***
	(0.0455)	(0.1135)	(0.1379)	(0.0897)
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Cubic State Trends	✓	✓	✓	✓
Post 1960 × i.State	✓	✓	✓	✓
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Observations	18,052	18,052	18,052	18,052
R^2	0.5880	0.5881	0.5883	0.5880

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Thanks!

Mean reversion and ceiling effects

- More competitive places allocated more land initially or are characterized by worse availability of land close to municipal head.

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Mean reversion and ceiling effects

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- There is then worse availability of land close to municipal head over time.
- Our plots indicated that this is not an issue.
- And we can partially control for this directly.

Testing for mean reversion and ceiling effects

- Consider:

$$
\begin{aligned}
y_{e,m} = & \; \alpha + \beta \cdot post + \gamma \cdot post_{e,m} \cdot pc_m + \\
& \; \phi \cdot stock_m + \kappa \cdot post_{e,m} \cdot stock_m + \eta_m + pres_t + \varepsilon_{e,m}
\end{aligned}
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- where $stock_m$ is either the stock of *ejidos* already distributed or the stock of land available for redistribution in municipality m at the time of the creation of *ejido* e.

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- The mean reversion effect should be driven by places that distributed a large stock of ejidos already.

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- The mean reversion effect should be driven by places that distributed a large stock of ejidos already.
- The ceiling effect should be driven by places where there is less land to be redistributed.

Controlling for Stock Already Allocated...

	(1)	(2)	(3)	(4)
Dep Var: Distance to Mun. Head				
Post 1960 $\times$ Political Competition	0.1108***	0.3161***	-0.4071***	-0.2606***
	(0.0419)	(0.0981)	(0.1189)	(0.0915)
Stock	0.0001	0.0002	0.0001	-0.0000
	(0.0009)	(0.0009)	(0.0009)	(0.0008)
Post 1960 $\times$ Stock	0.0012	0.0012	0.0014	0.0017**
	(0.0008)	(0.0008)	(0.0008)	(0.0008)
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Observations	18,052	18,052	18,052	18,052
R^2	0.5791	0.5793	0.5795	0.5794

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Controlling for Available Land...

	(1)	(2)	(3)	(4)
Dep Var: Distance to Mun. Head				
Post 1960 $\times$ Political Competition	0.1136***	0.3175***	-0.3644***	-0.2160**
	(0.0402)	(0.0967)	(0.1167)	(0.0931)
Available Land	-0.0086***	-0.0086***	-0.0083**	-0.0080**
	(0.0032)	(0.0032)	(0.0033)	(0.0033)
Post1960 $\times$ Available Land	0.0028***	0.0028***	0.0027***	0.0028**
	(0.0010)	(0.0010)	(0.0010)	(0.0011)
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓
Observations	18,051	18,051	18,051	18,051
R^2	0.5814	0.5816	0.5815	0.5814

Robust standard errors in parentheses clustered at municipality level, *** p<0.01, ** p<0.05, * p<0.1.

Ruling Alternative Interpretations

- Might capture larger allocations of land to places to placate demands from peasants, which forces the allocation of ejidos far from municipal heads (Albertus, Diaz-Cayeros, Magaloni, & Weingast, 2012).

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    - Test directly whether worse quality ejidos allocated in municipality with more expected competition.

Do Larger Allocations of Land Drive our Results?

	(1)	(2)	(3)	(4)
Panel A: Number of Ejidos				
Post1960	0.1428***	0.0961***	-0.0031	0.0290
	(0.0222)	(0.0126)	(0.0268)	(0.0240)
Post1960 × Competition	-0.0519***	-0.1184***	0.0807***	0.0349
	(0.0128)	(0.0269)	(0.0307)	(0.0228)
Observations	176,596	176,694	176,694	176,694
R²	0.0884	0.0884	0.0882	0.0882
Panel B: Number of Beneficiaries				
Post1960	11.7687***	7.0131***	-2.6994	2.2568
	(2.7439)	(2.2080)	(3.3161)	(3.0125)
Post1960 × Competition	-5.5597***	-13.5328***	7.1722**	0.8063
	(1.1850)	(2.4978)	(2.9164)	(2.2347)
Observations	176,596	176,694	176,694	176,694
R²	0.0499	0.0499	0.0497	0.0496
Panel C: Granted Land Area				
Post1960	21.5454	105.3713	593.4483	584.2933
	(179.5875)	(101.0849)	(382.8517)	(473.8674)
Post1960 × Competition	96.9783	232.6800	-527.5652	-446.2591
	(106.0125)	(236.8848)	(463.6975)	(501.3181)
Observations	176,596	176,694	176,694	176,694
R²	0.0416	0.0416	0.0416	0.0416
Competition Measure:	ENP	Fract.	PRI Vote	PRI Inc.
Municipality Fixed Effects:	✓	✓	✓	✓
President Fixed Effects:	✓	✓	✓	✓

Robust standard errors in parentheses clustered at municipality level, *** p<0.01, ** p<0.05, * p<0.1.

Does land quality drive our results?

Dep. var:	(1) FAO Quality	(2) Resilience	(3) Performance	(4) Overall Index
Panel A: Effective Number of Political Parties				
Post 1960	-0.0215	0.0074	-0.0320	-0.0726
	(0.0358)	(0.0364)	(0.0382)	(0.1384)
Post 1960 × Competition	0.0138	-0.0132	0.0180	0.0267
	(0.0225)	(0.0212)	(0.0211)	(0.0722)
R^2	0.9074	0.7374	0.8163	0.7704
Panel B: Vote Fragmentation				
Post 1960	-0.0083	0.0025	-0.0218	-0.0540
	(0.0197)	(0.0209)	(0.0234)	(0.0896)
Post 1960 × Competition	0.0288	-0.0501	0.0581	0.0757
	(0.0564)	(0.0546)	(0.0565)	(0.2048)
R^2	0.9073	0.7374	0.8164	0.7705
Panel D: PRI Vote Share				
Post 1960	0.0384	-0.0850*	0.0740	0.0700
	(0.0529)	(0.0457)	(0.0492)	(0.1722)
Post 1960 × Competition	-0.0473	0.0901	-0.0973	-0.1258
	(0.0635)	(0.0576)	(0.0641)	(0.2290)
R^2	0.9073	0.7375	0.8164	0.7705
Panel C: PRI Inc.				
Post 1960	0.0605	-0.0584*	0.0212	-0.0302
	(0.0538)	(0.0310)	(0.0316)	(0.0780)
Post 1960 × Competition	-0.0637	0.0475	-0.0253	0.0017
	(0.0546)	(0.0332)	(0.0337)	(0.0892)
R^2	0.9074	0.7375	0.8163	0.7705
Observations	23,680	23,823	23,823	23,823

Robust standard errors in parentheses clustered at municipality level. *** p<0.01, ** p<0.05, * p<0.1.
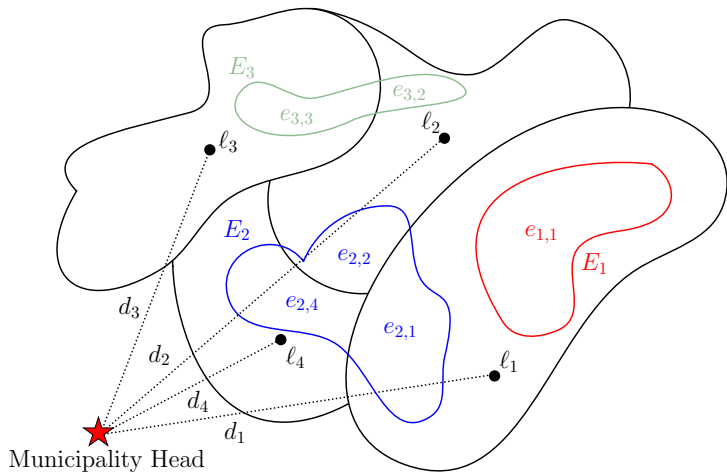
Figure: Example: Computing ejidal distances to municipality heads

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