Land Inequality and the Provision of Public Works

---- Evidence from National Rural Employment Guarantee Scheme

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Introduction

- This is the first study directly explaining district-level heterogeneity of providing public works from the perspective of big landlords;
- It also adds to the literature on the relation between inequality and redistributive policies (e.g. Galasso & Ravallion, 2000).
- With district-level land distribution data at 2000, 2005, 2010, and the implementation data of NREGA program during 2006-2010, I compare across district (within-state) variations of land concentration and public works provision.
- To address endogeneity, I use as IV historical institutions in India land revenue collection system in British colonial period (Banerjee & Iyer, 2005).

Data and descriptive statistics

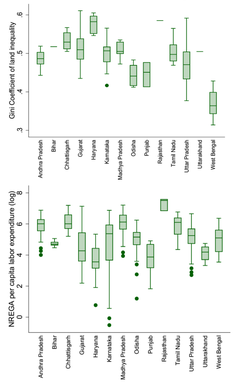

Fig 1. Land Gini inequality by state, 2005 (Source: India Ag census)

Fig 2. NREGA labor expenditure by state, 2006-10 (Source: NREGA public portal)

Empirical Model

$$Y_{it} = \alpha_0 + \beta * INE_{i,2005} * + \gamma X_{it} + \gamma_s D_{state} + \varepsilon_{it}\,,$$
$$\forall t \in [2006, 2010]$$

where β is the coefficient of interest;
$INE_{i,2005}$ is land Gini index in district i in 2005;
Y_{it} is NREGA implementation in district i in year t.

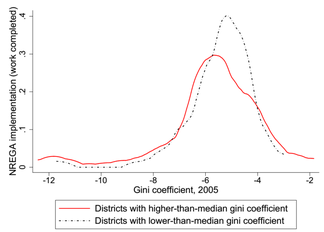

Fig 3. Land inequality and the provision of public works.

Addressing endogeneity

Instrument variable: Land revenue collection system in British colonial period (Banerjee & Iyer, 2005)

$$INE_{\{i,2005\}} = \alpha_1 + \rho * Z_i + \lambda X_{it} + \gamma_s D_{state} + \mu_i$$

where Z_i is the binary indicator that equals 1 in landlord-dominated districts in British India.

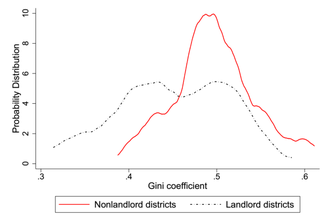

Fig 4. Visualize first stage --- land revenue collection decreases land inequality

Results

First stage results: Landlord-dominated revenue system reduces today's land inequality .

Dependent variable: Land inequality (gini coefficient) in 2005 (First stage)

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
Landlord district indicator	-0.036***	-0.028***	-0.024**	-0.029***	-0.023**
	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)
log Total land area		0.017	0.017	0.017	0.016
		(0.014)	(0.014)	(0.014)	(0.014)
log Rural population		-0.022	-0.027	-0.021	-0.028*
		(0.016)	(0.016)	(0.017)	(0.017)
Literacy rate		0.079	0.064	0.084*	0.071
		(0.048)	(0.047)	(0.048)	(0.047)
log(wet season rainfall)		0.019	0.016	0.020*	0.015
		(0.012)	(0.012)	(0.012)	(0.012)
% of Ag labourers		0.023	0.053	0.017	0.044
		(0.053)	(0.056)	(0.060)	(0.060)
Backwardness index			0.015		0.023**
			(0.010)		(0.010)
Phase 2 indicator				-0.007	-0.011
				(0.010)	(0.010)
Phase 3 indicator				-0.004	-0.014
				(0.011)	(0.011)
Observations	119	118	118	118	118
R square	0.61	0.64	0.64	0.64	0.65
F test: landlord indicator coef=0	13.48	7.75	4.67	7.21	4.15

Second stage results: Higher land inequality reduces the provision of public works.

Dependent variable: log per capita labor expenditure

	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS
Gini coef.	-0.99	-6.99***	-14.31***	-10.91**	-11.21***	-12.40**
	(1.23)	(2.54)	(3.77)	(4.85)	(3.62)	(5.14)
log Total land area	0.65***		1.05***	0.94***	0.87***	0.91***
	(0.21)		(0.19)	(0.21)	(0.17)	(0.20)
log Rural population	-0.85***		-1.40***	-1.17***	-1.22***	-1.30***
	(0.21)		(0.17)	(0.25)	(0.16)	(0.26)
Literacy rate	-0.36		0.34	0.32	0.75	0.78
	(0.74)		(0.83)	(0.78)	(0.75)	(0.78)
log(wet season rainfall)	0.27*		0.41**	0.39**	0.35**	0.35**
	(0.16)		(0.18)	(0.18)	(0.17)	(0.17)
% of Ag labourers	0.23		2.75***	1.86**	1.00	1.24
	(0.79)		(0.74)	(0.85)	(0.73)	(0.83)
Backwardness index	-0.18			-0.37		0.16
	(0.22)			(0.28)		(0.33)
Phase 2 indicator	-0.53***				-0.60***	-0.64***
	(0.15)				(0.10)	(0.15)
Phase 3 indicator	-0.90***				-0.95***	-1.02***
	(0.18)				(0.11)	(0.19)
Observations	469	472	469	469	469	469
First-stage F statistics		65.63	33.82	21.64	32.38	20.11

Conclusions

Compare two districts A and B with similar socio-economic characteristics. If district A's land Gini measure is 0.01 (or, 0.01/0.47=2.1%) larger than that in district B, then we have the following conclusions.

- Per capita NREGA labor expenditure in the former district will be 12.4% lower than that in the latter district.
- The proportion of rural people that worked in NREGA in district A will be 0.0076 percentage points (or, 14.4%= 0.0076/0.0528) lower than in district B.
- Average days that each rural woman worked in NREGA in district A will be lower by 13.17% than in district B.
- Average days that each SC/ST person worked in NREGA in district A will be lower by 13.92% than in district B.
- The total number of completed works per rural person in district A will be lower by 27.8% than in district B.

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Further information

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