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Land Inequality and the Provision of Public Works

---- Evidence from National Rural Employment Guarantee Scheme

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*Selected Paper prepared for presentation at the 2017 Agricultural & Applied Economics Association
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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

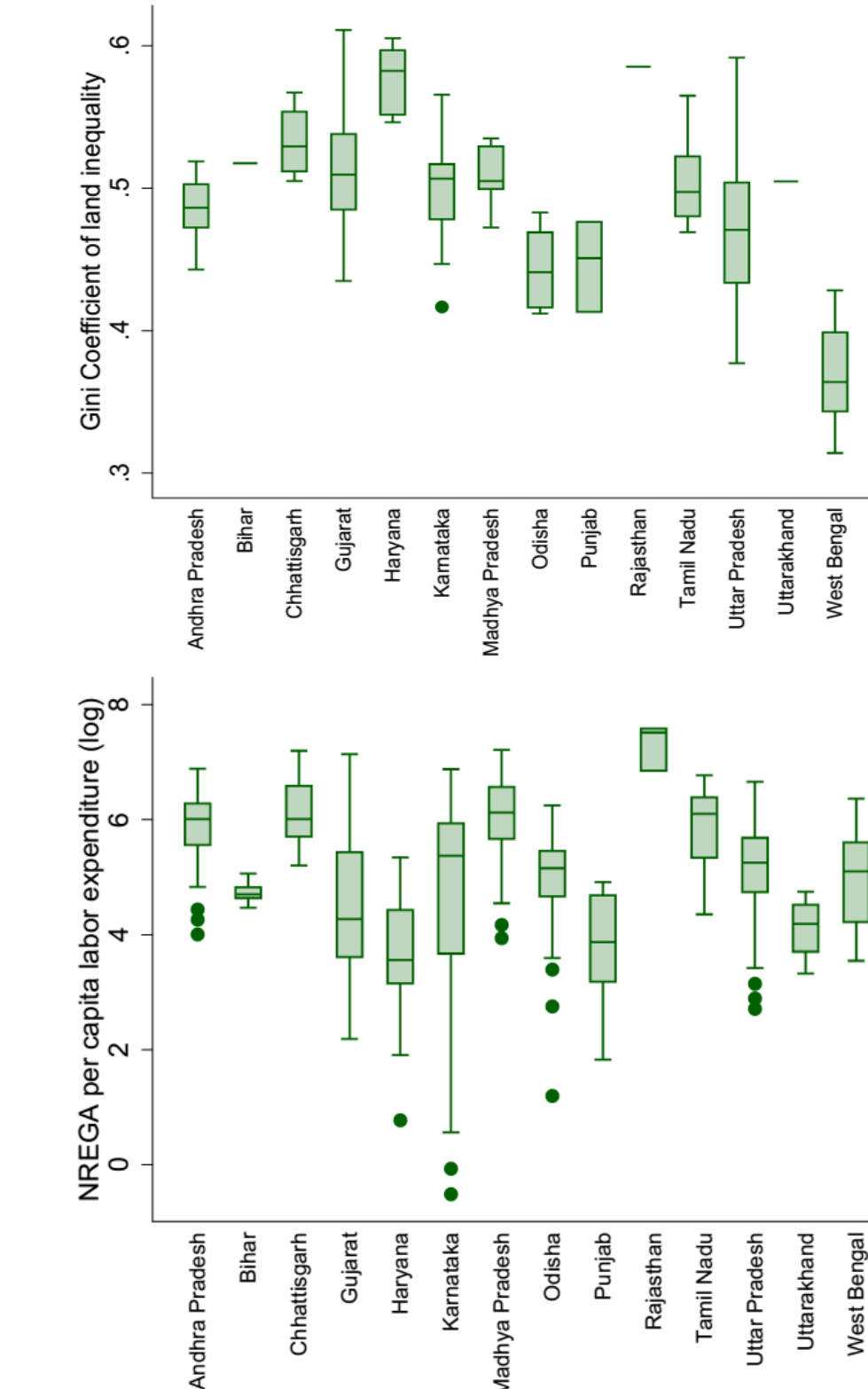


Fig 1. Land Gini inequality by state, 2005 (Source: India Ag census)

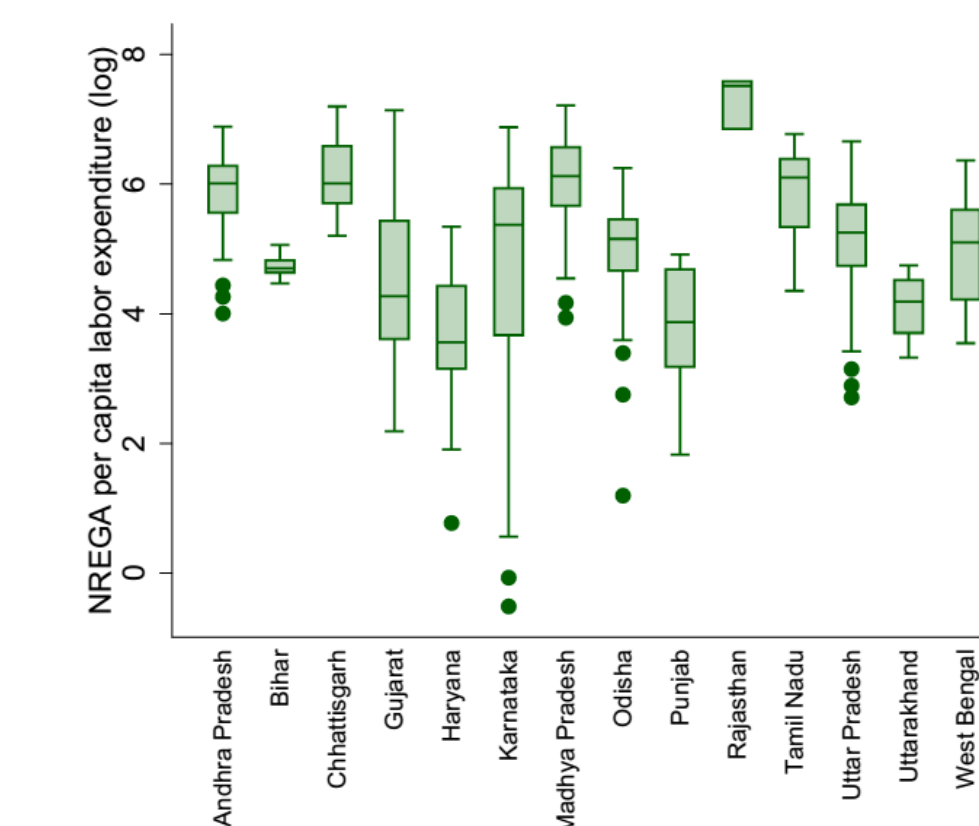


Fig 2. NREGA labor expenditure by state, 2006-10 (Source: NREGA public portal)

Empirical Model

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

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 .

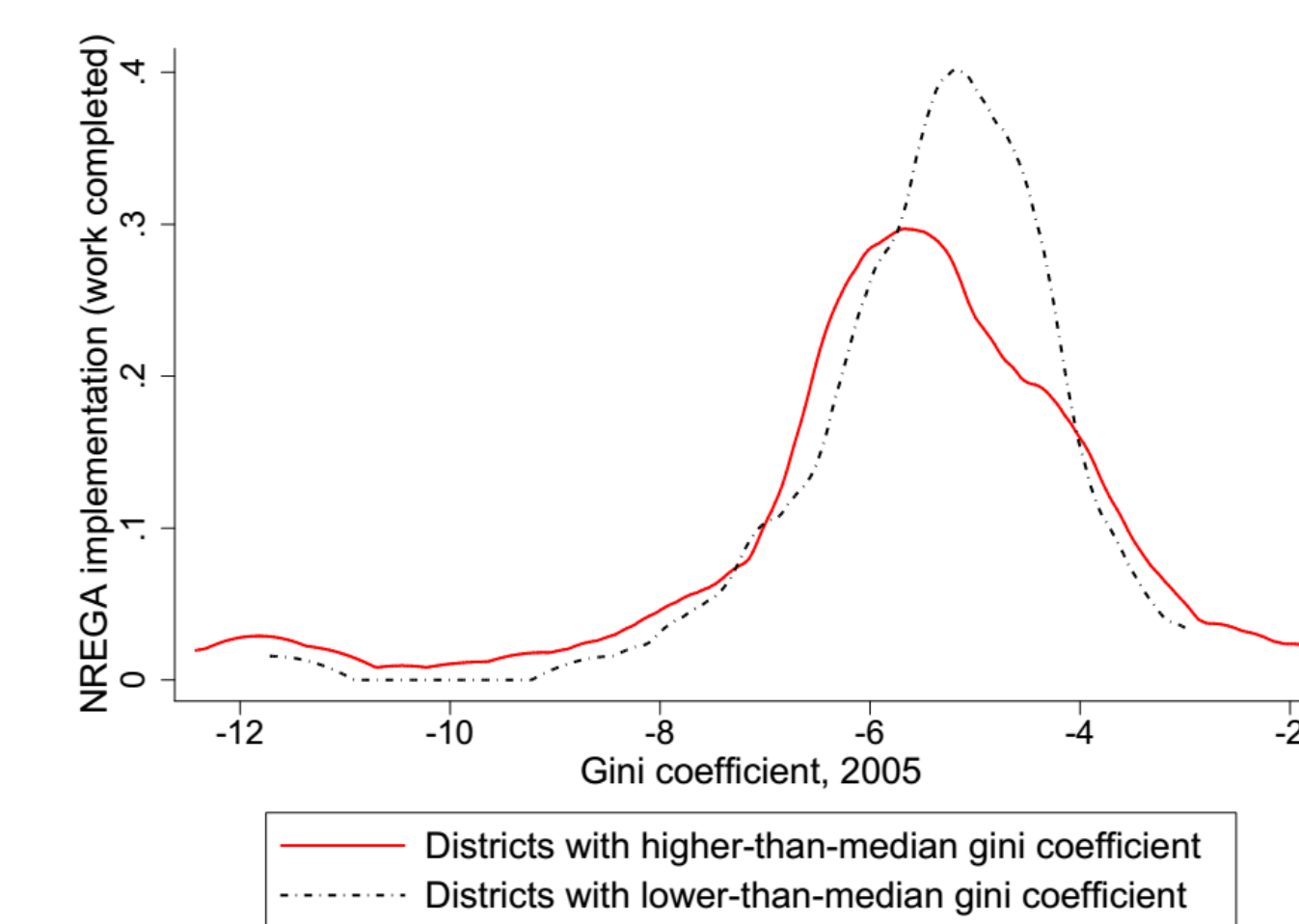


Fig 3. Land inequality and the provision of public works.

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.

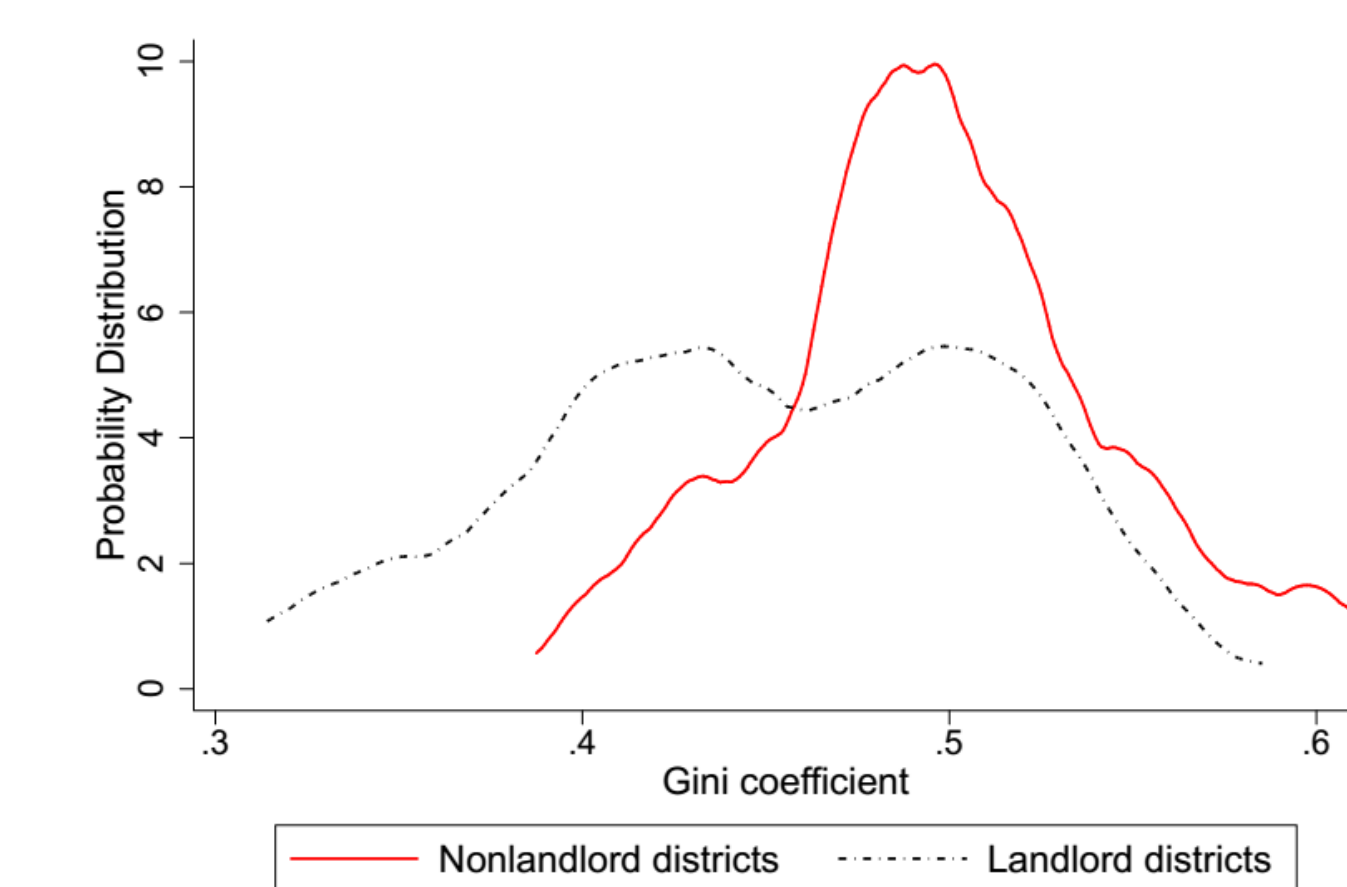


Fig 4. Visualize first stage --- land revenue collection decreases land inequality

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*** (0.010)	-0.028*** (0.011)	-0.024** (0.011)	-0.029*** (0.011)	-0.023** (0.011)
log Total land area		0.017 (0.014)	0.017 (0.014)	0.017 (0.014)	0.016 (0.014)
log Rural population		-0.022 (0.016)	-0.027 (0.016)	-0.021 (0.017)	-0.028* (0.017)
Literacy rate		0.079 (0.048)	0.064 (0.047)	0.084* (0.048)	0.071 (0.047)
log(wet season rainfall)		0.019 (0.012)	0.016 (0.012)	0.020* (0.012)	0.015 (0.012)
% of Ag labourers		0.023 (0.053)	0.053 (0.056)	0.017 (0.060)	0.044 (0.060)
Backwardness index			0.015 (0.010)		0.023** (0.010)
Phase 2 indicator				-0.007 (0.010)	-0.011 (0.010)
Phase 3 indicator				-0.004 (0.011)	-0.014 (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 (1.23)	-6.99*** (2.54)	-14.31*** (3.77)	-10.91** (4.85)	-11.21*** (3.62)	-12.40** (5.14)
log Total land area	0.65*** (0.21)	0.65*** (0.21)	1.05*** (0.19)	0.94*** (0.21)	0.87*** (0.17)	0.91*** (0.20)
log Rural population	-0.85*** (0.21)	-0.85*** (0.21)	-1.40*** (0.17)	-1.17*** (0.25)	-1.22*** (0.16)	-1.30*** (0.26)
Literacy rate	-0.36 (0.74)	-0.36 (0.74)	0.34 (0.83)	0.32 (0.78)	0.75 (0.75)	0.78 (0.78)
log(wet season rainfall)	0.27* (0.16)	0.27* (0.16)	0.41** (0.18)	0.39** (0.18)	0.35** (0.17)	0.35** (0.17)
% of Ag labourers	0.23 (0.79)	0.23 (0.79)	2.75*** (0.74)	1.86** (0.85)	1.00 (0.73)	1.24 (0.83)
Backwardness index	-0.18 (0.22)	-0.18 (0.22)		-0.37 (0.28)		0.16 (0.33)
Phase 2 indicator	-0.53*** (0.15)	-0.53*** (0.15)		-0.60*** (0.10)	-0.64*** (0.10)	-0.64*** (0.15)
Phase 3 indicator	-0.90*** (0.18)	-0.90*** (0.18)		-0.95*** (0.11)	-1.02*** (0.11)	-1.02*** (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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