Democratization, Elite Capture and Economic Development

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The aim of this paper is to identify whether and how the shift to democracy from autocratic aristocracy affects the *composition* of public goods and thus overall output.

We model both aristocratic and democratic decision-making in the context of an equilibrium model with groups that have different interests in (returns to) specific public goods.

We compare the theoretical composition of public goods under each regime to the composition that maximizes income.

We derive implications for how democratization shifts the composition of public goods, which enables a test of whether under democracy there is still a dominance of elite capture and whether democratization increases output.

We apply the model to annual panel data we collected on 253 villages over the period 1971-1999 that describe:

   a. The form of governance (e.g., elected council, head man, central government appointee).

   b. Public programs initiated by type (e.g., employment).

   c. Infrastructure in place (e.g., public irrigation assets).

This period was when India experienced village democratization promoted by both state-level and national constitutional amendments.

Many villages experienced a change to democratically elected councils (*panchayats*), mostly from "head man" rule.

Figure 1. Fraction of REDS Villages Under State Stage 2 and 3 Amendments and with an Elected Panchayat
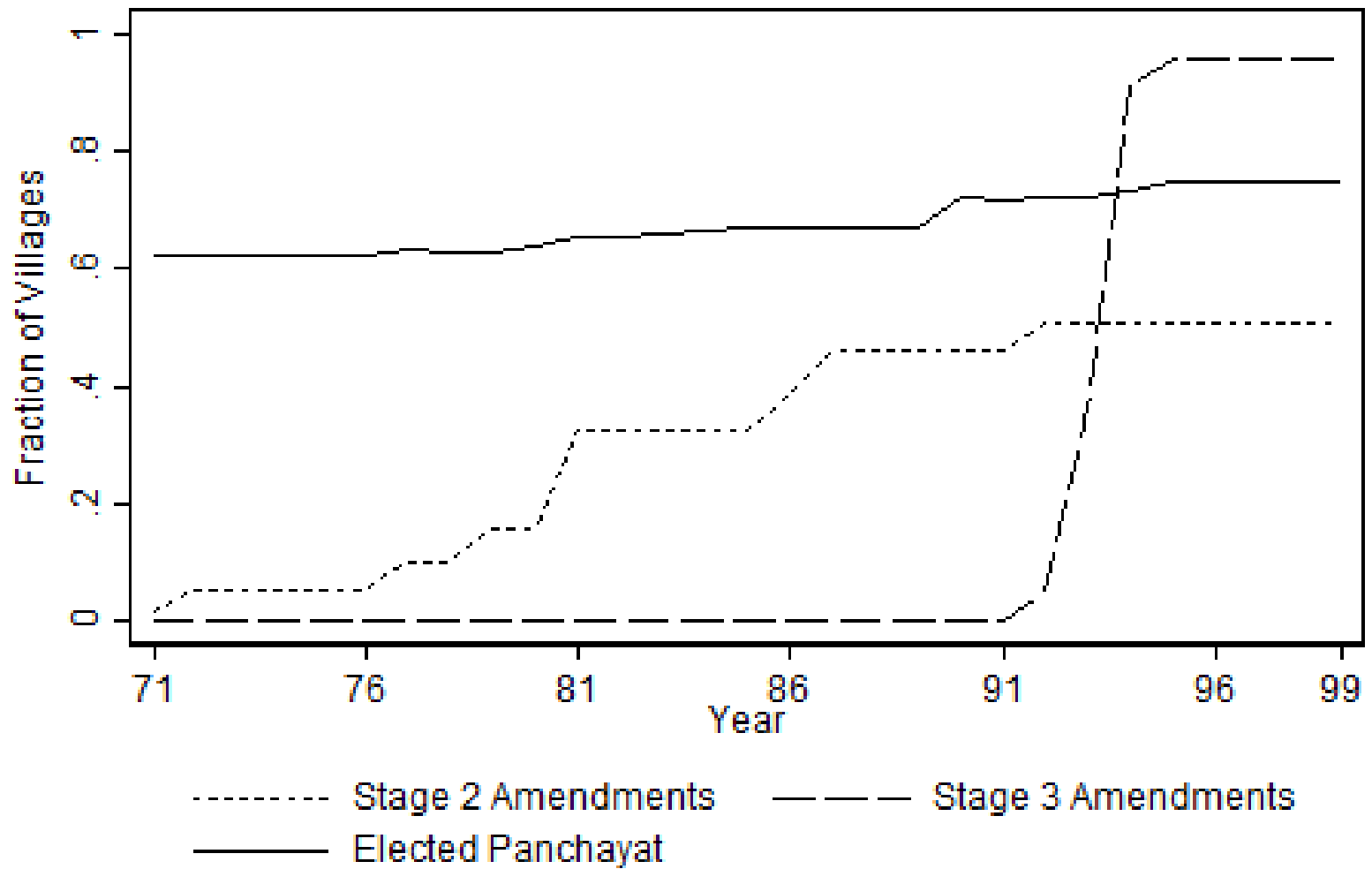
Figure 1. Fraction of REDS Villages with Infrastructure Programs by Type and Year
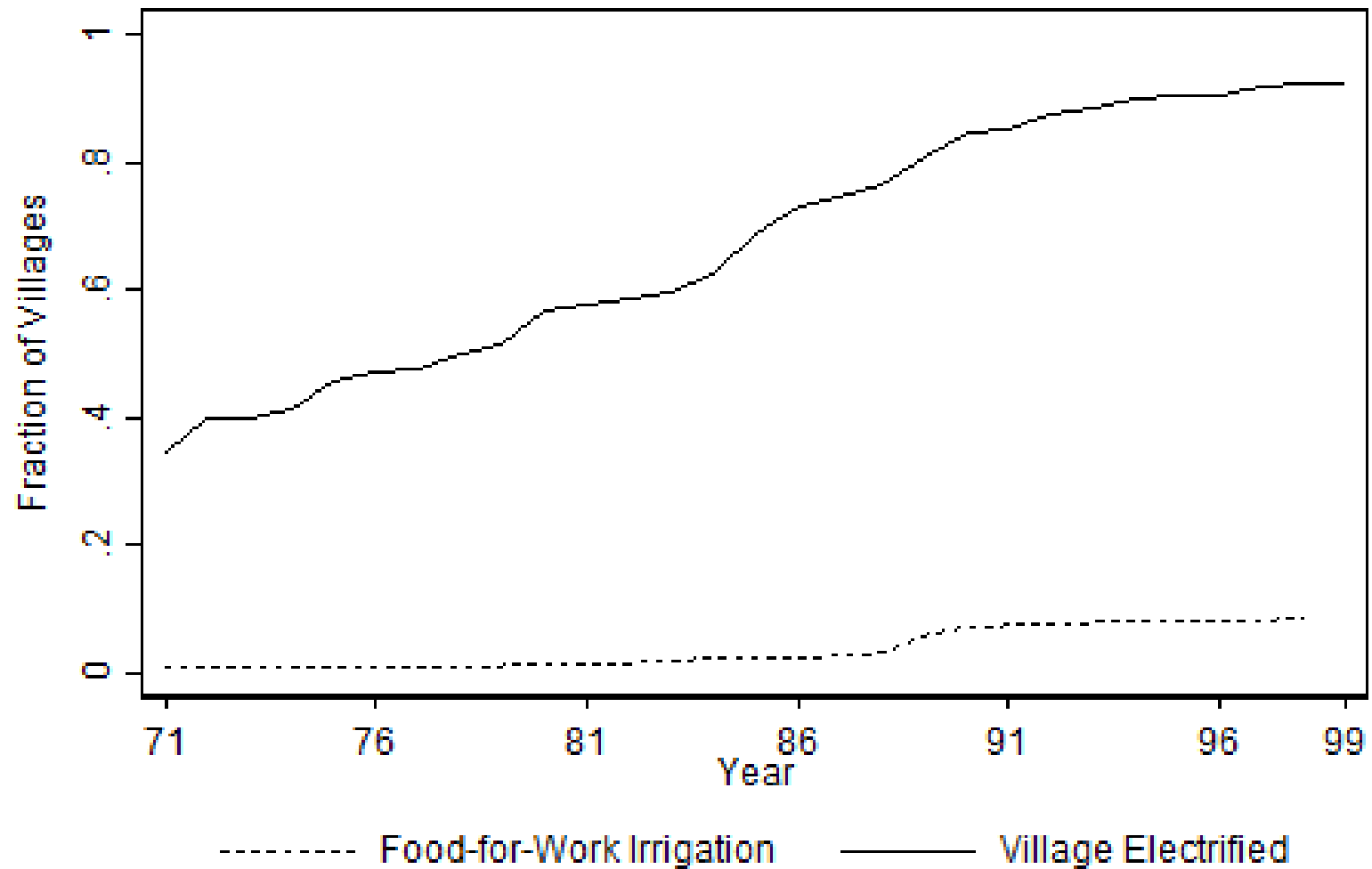
Figure 1. Fraction of REDS Villages with Public Employment Programs by Type and Year

- - - - - - Guaranteed Employment Scheme — — — Professional Training
——— General Employment

Figure 6. Changes in the Share of Land Irrigated, School Enrollment Rates (Ages 10-14), and the Ratio of Landless to Landed Household Food Expenditure. 1971-1999
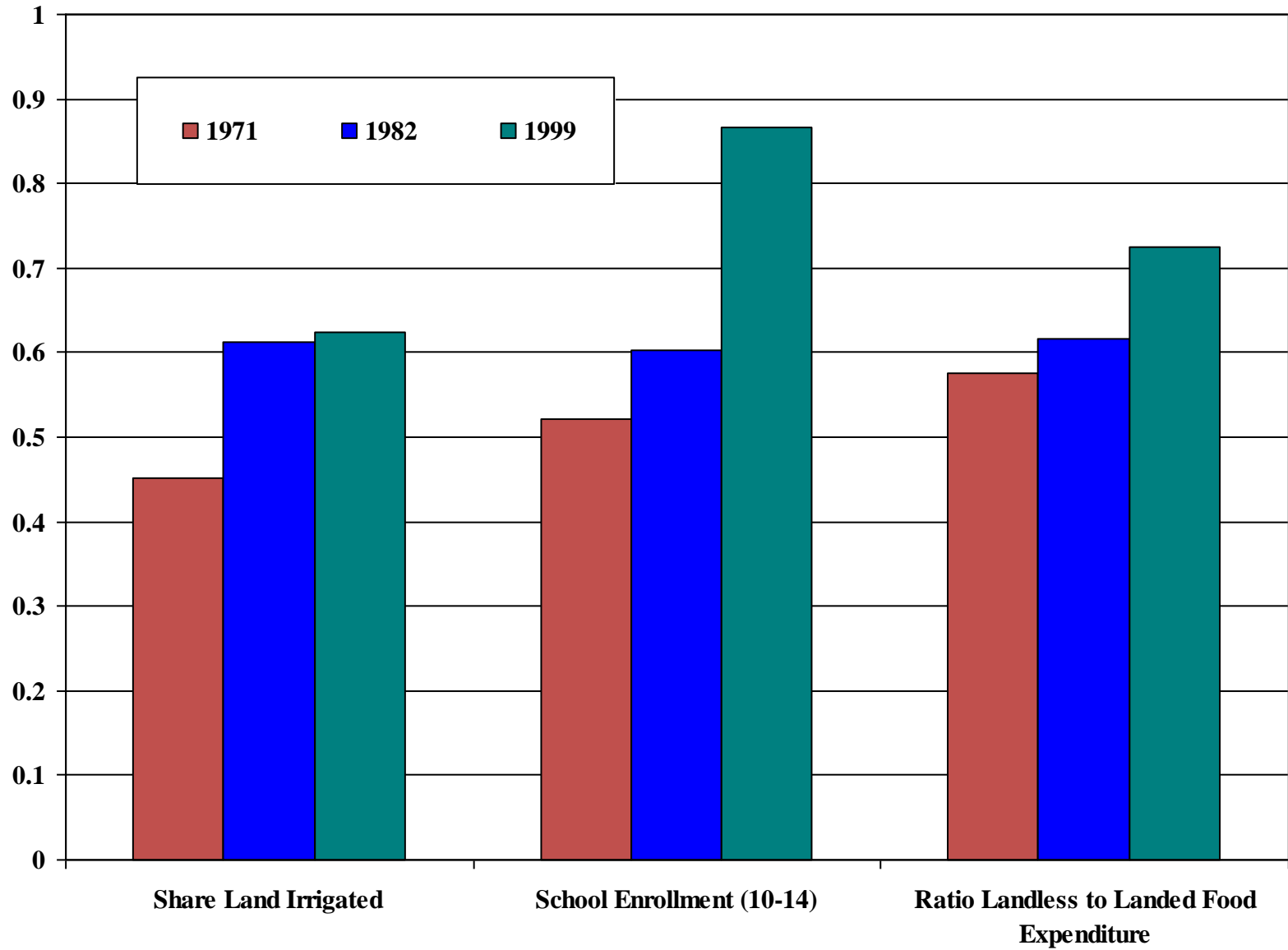
The key points of the theoretical model:

1. Public goods are heterogeneous in their effects on productivity and thus growth.

2. Groups exist that have common interests and returns to specific public goods differ across the groups.

3. In aristocracy, the ruling elite is one interest group with higher returns to (preferences for) particular public goods.

4. Under democracy, all interest groups have a say in the allocation of public goods, weights are population shares.

5. Thus, democracy shifts the public goods composition.

The challenges for predicting what will happen due to democratization are:

1. To identify the (exogenous) interest groups and specify which public goods they will prefer.

2. To specify how each of the public goods affects the welfare of the groups and productivity.

3. To specify how the groups interact in the equilibrium of the economy.

In the context of the Indian rural economy, in which agriculture is the dominant occupation/industry, we specify two key interest groups:

Those who own and land and those who do not.

1971 80% (1999 76%) of workforce in agriculture.

We focus on four infrastructural public goods or programs for which we show empirically have different effects on the incomes and welfare of the two interest groups:

Secondary schooling, irrigation, electrification, roads.

We also focus on employment programs.

A. Interest groups in the village economy

Two classes of otherwise identical households:

1. The landed, who own land (elite), designated by A, who make up $1 - \rho$ of all households.

   Farm size of each landed household $= A/(1 - \rho)$, where A = total land in the village.

2. The landless (poor), designated by N, who work on the land for a wage w.

Labor is geographically immobile; agricultural output is a tradeable good, sold at international prices (normalized to 1).

The community (village) is provided a fixed amount of public funds that can be allocated to three public goods/programs:

1. An employment program that employs r workers per household at the local equilibrium wage w to produce a good or service φ_r that is equally valued by the landless and landed.

2. A facility h constructed using external inputs (no local labor), whose benefits are also equal across all households; e.g., a literacy program, a health facility.

3. Construction of an asset q ("infrastructure") that directly augments the productivity of ag. production but not directly the productivity of the landless (public irrigation, electrification, schools, roads).

The per-household public budget constraint is thus

$$P(r,q,h) = B - wr - qA^{\gamma} - h = 0,$$

where B = per-household public revenue, and all the other programs are expressed per household.

if $\gamma=1$, q = per-household expenditure on irrigation assets per-acre

if $\gamma=0$, q = per-household school expenditures or expenditures on electrification.

Prices of public facilities benefitting agricultural production and health facilities are normalized to one.

Agricultural production is CRS and has three inputs: A, per-acre labor l_e, and q.

The labor market clears so the per-acre demand for workers l_e = the per-acre supply of workers available for farming $(l - r) / A$.

Household utility functions are identical for all households:

$$u(c, h, r) = c_t + \phi_h h + \phi_r(r),$$

   where c =own consumption and the φ_i are the returns to two
   public goods that directly affect welfare.

Note that the linear utility function implies no social returns to redistribution = no value to transfer programs.

Budget constraints differ for the two classes:

$$c_A = A / (1 - \rho)\pi(q, r, A) + w(q, r, A)l = y_A$$

$$c_N = w(q, r, A)l = y_N.$$

B. Aristocratic governance and public goods composition

The determination of the allocation of public goods is in the hands of the landed, who allocate public goods to maximize their own utility:

$$w(r, q, A)(l - \frac{l - r}{1 - \rho}) + \frac{A}{1 - \rho} g(q, (l - r) / A) + \phi_h(B - A^\gamma q - w(r, q, A)r) + \phi_r(r).$$

The FONC for q:

$$\frac{\partial}{\partial q} w(r,q,A)(l - \frac{l-r}{1-\rho}) + \frac{A}{1-\rho} \frac{\partial}{\partial q} g(q,(l-r)/A) - \phi_h (A^\gamma + \frac{\partial}{\partial q} w(r,q,A)r) = 0$$

depends on "trickle down" - how q (and r) affects equilibrium wages as well as agricultural output.

How does the "aristocratic" allocation of public goods compare to the allocation that maximizes GDP per household?

We show: excess spending on the infrastructural programs (irrigation, electrification, schools) relative to the allocation in the GDP-maximizing benchmark.

C. Democratic governance and public goods composition.

The decision-makers are elected from a competition between candidates who must appeal to the interests of *all* of the members of the community, landed and landless.

If the interests of the two classes differ, under democracy, the relative size of the populations in the two groups, ρ, plays a direct role in the determination of the public good composition.

We assume that there are two parties that compete for public office and households vote based on the relative value they assign to the two parties.

We set out a Nash game stochastic voting model.

Under some regularity conditions, there is a unique Nash equilibrium in which both parties offer the same policy.

In this game, for example, the first-order condition with respect to the agricultural public good promised by party X, q_x, is

$$(1-\rho)\frac{\partial v_A^*}{q_X} + \rho\frac{\partial v_N^*}{q_X} + \mu\frac{\partial P}{\partial q_X} = 0,$$

where μ is the Lagrange multiplier associated with the public budget constraint.

Thus, in a two-party democracy, the distribution of public goods is such that the weighted (by ρ) marginal contributions to the utility of the two classes are equalized.

How do the allocations of q and r under democracy compare with those that maximize per-household GDP?

Under democracy there will be excessive spending on public employment programs.

Under democracy the allocation to agricultural productivity assets is biased negatively (positively) if those investments lower (raise) the equilibrium wage.

D. Aristocratic versus democratic public good allocations.

We define democratization as a move away from a regime in which one interest group controls public resources - the aristocratic regime - to one in which all households have a say in how public funds are allocated.

We consider an objective function

$$(1-d\varrho)v_A^*(q,r,b) + d\varrho v_N^*(q,r,b),$$

which embeds the two forms of governance.

> For $d=0$, the maximand reflects solely the welfare of the landed households, corresponding to the full capture of the local authority by the local elite.

> For $d=1$ the objective function corresponds to that of the democracy model.

Thus, under democracy, *ceteris paribus*, the allocation of public expenditures will depend directly on the share of landless households ρ.

Democracy gives weight to the interests of the landless in proportion to their share in the population.

Under aristocratic rule the landless are not considered at all:

A simple test of whether democratic rule is in effect is to see if increases in ρ allocate resources more towards public goods allocations that favor the landless.

BUT, ρ also enters the first-order conditions determining the allocation of public goods in the aristocratic regime.

An increase in the proportion landless for fixed A and l increases the landholdings of the landed and increases the returns to q and the cost of increases in r.

Thus, shifts in ρ affect the interests of the two classes and not just their voting power under democracy.

A test of whether true democratization has occurred requires examining *differences* in the effects of ρ on the public goods allocations across the two regimes taking into account the general-equilibrium effects of shifts in ρ.

We thus embed the governance regimes in the village economy structure set out above.

The voting equilibrium given will yield expenditures to maximize the nested objective function given the public budget constraint and the labor-market clearing condition.

So, we get:

<u>Proposition:</u> *If the landed are net hirers of labor, the landless are net beneficiaries of wage increases, and increases in agricultural assets do not increase the demand for labor, then under democracy increases in ρ will shift public resources more strongly towards employment programs and away from infrastructural investment programs <u>relative</u> to their effects under aristocracy.*

The proof is based on the differential effects of ρ on q and r:

$$\frac{dq}{d\rho}\bigg|_{d=1} - \frac{dq}{d\rho}\bigg|_{d=0} = -\frac{1}{(1-\rho)^2}\left(-A\frac{\partial}{\partial l}g\left(q,\frac{l-r}{A}\right)z_{11} + (l-r)\frac{\partial}{\partial r}w(q,r,A)z_{12}\right)$$

and (the z_{ij} are the elements of the inverted Hessian):

$$\frac{dr}{d\rho}\bigg|_{d=1} - \frac{dr}{d\rho}\bigg|_{d=0} = \frac{1}{(1-\rho)^2}\left(-A\frac{\partial}{\partial l}g\left(t,\frac{l-r}{A}\right)z_{21} + (l-r)\frac{\partial}{\partial r}w(t,r,A)z_{22}\right).$$

Testing the Model and Assessing Democratization

1. We need a (natural) experiment in which there is a shift to democracy, with known reasons for the shift (instruments).

2. We need data documenting the public goods and programs across the regimes.

3. We need to determine the interests of the two groups - landed and landless.

   Which public goods and programs benefit more each of the two groups.

We provide our own evidence of the beneficiaries of

1. Investments in irrigation: increase profits of the landed but do not increase the demand for labor (across-plots estimates).

2. Secondary schooling: increases farm profits when the farmer is more schooled but when the same farmer works in the labor market (as ag. worker) no returns to schooling.

3. Village electrification: increases farm profits, and more likely landed households hooked up to line.

We cite existing studies of the beneficiaries of

1. Employment programs: raise wages, lower profits (based on RCT employing workers in India villages (Breza *et al.*, *AER* 2021)).

2. Road building: only benefits the landless, via facilitating temporary migration (Indian road-building program effects (Asher and Novosad, *AER* 2020)).

So landless prefer employment programs, roads; landed prefer irrigation investments, electrification, secondary schools.

Empirical strategy and Findings

Does the transition to democracy have different consequences for the portfolio of public expenditures depending on the share of the landless ρ in the population?

Using the 29-year village-level panel 1971-1999 we estimate an approximation to public expenditure equations, based on the model, of the form:

$$y_{itk} = \beta_{0k} + \beta_{1k} d_{it} + \beta_{2k} d_{it} \rho_{i0} + \beta_{3k} d_{it} A_{i0} + \tau_t + \psi_i + \sigma_{s_k t} + \varepsilon_{it}$$

where i = village, t = time, and k = public expenditure type, ρ_{i0} = the initial village landless share, A_{i0} = total village land holdings, and the τ_t, ψ_i, σ_{st} are time, village and state-year fe's.

We condition on the 1971 landless share rather than the share at a particular point in time, to avoid possible concerns about endogenous changes to landless share over time.

Transitions between landless and landed status and household migration are uncommon even after 30 years.

The level effect for the landless share is thus absorbed in the village fixed effect.

The primary coefficient of interest is β_{2k}, the interaction between democracy and the village landless share, net of land size.

A potential concern is that the timing of democracy in a village may in part be a choice - endogenous transition.

Landed households in villages with a relatively large landless share and an emerging perceived need for public irrigation, for example, may be especially resistant to democratization.

Or villages with more landless might see more benefit from pushing for a transition to democracy if wages are low.

But ultimately, resistance to democratization is constrained by state amendment legislation.

Thus, we assume that the state-amendments predict when democracy takes place in a village and is affected by ρ.

Do state-wide amendment effects on village-specific adoptions of democratic governance actually differ by initial landless population shares?

We created two event study graphs, by amendment rounds.

The vertical axis in each contains the share of villages that are democratized among those states that passed the relevant legislation.

The horizontal axis denotes the deviation from the year the relevant amendment took effect.

The graphs have a time window of 8 years around the timing of the legislation and are balanced (e.g., we only include states that are not truncated by the range of our data).
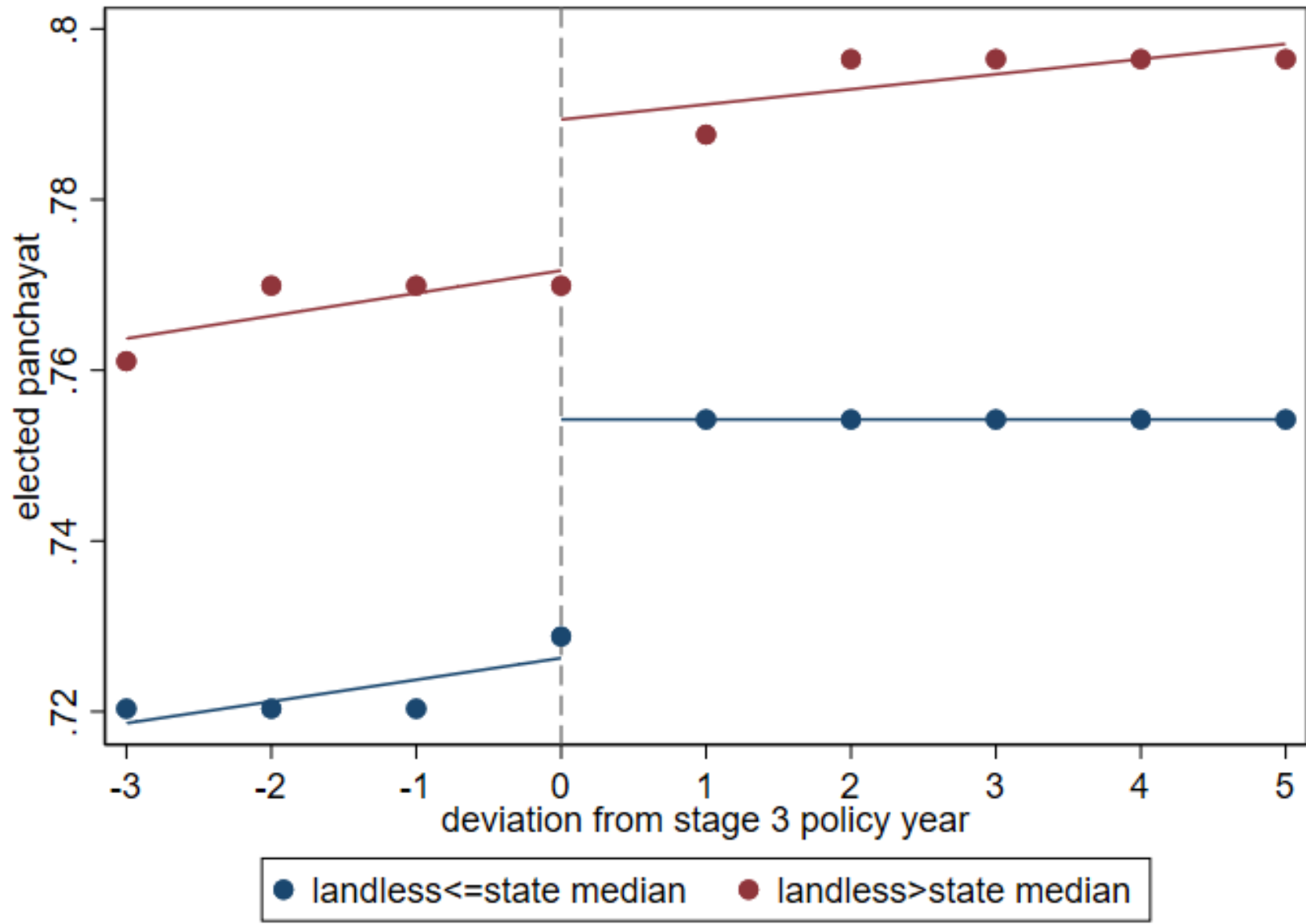
Table 5 presents IV-FE estimates using the retrospective annual histories covering the period 1971-1999.

The F-tests for the excluded instruments show ample power.

The first three columns: public programs that favor landed households - irrigation, electrification and secondary schools.

The remaining columns: public programs that may differentially favor the landless - primary schools and employment programs.

The signs of the democracy/landless share interaction coefficients are consistent with the model.

Table 5
IV-FE Estimates of the Effects of Village Democratization on Electrification, Schools, and Public Programs for Irrigation and Employment
REDS Villages 1971-1999

Variable/Program	Irrigation work program	Electrification	Secondary School	Primary School	Employment Program 'for general welfare'	Employment Guarantee Scheme	Professional Training Program
Elected Panchayat	0.393 (0.103)	0.253 (0.155)	0.349 (0.0840)	-1.155 (0.170)	-0.367 (0.120)	-0.367 (0.0800)	-0.0121 (0.0142)
Elected Panchayat x proportion village landless	-0.955 (0.217)	-1.20 (0.325)	-0.542 (0.176)	2.089 (0.355)	1.30 (0.252)	0.964 (0.168)	0.0576 (0.0296)
Land per household 1971*elected panchayat	-0.00344 (0.00846)	-0.000021 (0.00126)	-0.00318 (0.000681)	0.00962 (0.00137)	0.00125 (0.000975)	0.00201 (0.000650)	0.0000052 (0.000115)
Village fixed effects	Y	Y	Y	Y	Y	Y	Y
State-specific time trends	Y	Y	Y	Y	Y	Y	Y
N	7,279	7,279	7,279	7,279	7,279	7,279	7,279

Standard errors in parentheses. Observations weighted by village population size in 1971. The first-stage excluded instruments include: amendment stages 1-3, the three stages interacted with each other, the three stages interacted with the village landless share, and interacted with each other, the three stages interacted with village land per household and interacted with each other. The F-statistics (F17, 6996) for the excluded instruments for the elected panchayat, and the interactions of the elected *panchayat* with the landless share and land per household are 330.88, 68.35, and 363.28, respectively

Robustness checks:

One concern is that the democratization effects are not time-invariant.

To assess whether this is a problem, we separated out effects within 5 years of democratization (one term length for an elected *panchayat*) and effects after 5 years.

Heterogeneity in effects:

Used only a portion of the data where we the control group consisted of villages that never transitioned.

To get a better sense of the magnitude of the democratization effects we computed the predicted effects of democracy under different landless shares from the estimates in the table.

We specify three cases:

$\rho = 0$, corresponding to full control by the landed (elite capture).

$\rho = 0.6$, corresponding to the landless being dominant.

ρ at the mean for all the villages.

The key finding is that the effects of democratization on the public programs *change sign* depending on the magnitude of the landless share.

Table 6
FE-IV Estimated Effects of Democracy by the Proportion of the Population Landless
on Infrastructure Investment and Employment Programs
REDS Villages 1971-99

Program/ρ value	Landed in Control ($\rho=0$)	Landless Majority ($\rho=0.6$)	Landless Minority ($\rho=0.29$, mean)
Irrigation work program	0.214 (0.0627)	-0.359 (0.0732)	-0.0633 (0.0200)
Electrification	.254 (0.0948)	-0.467 (0.110)	-0.0944 (0.0306)
Secondary school	0.184 (0.0512	-0.141 (0.0592)	0.0270 (0.0166)
Primary school	-0.655 (0.104)	0.598 (0.120)	-0.0493 (0.0335)
Employment program 'for general welfare'	-0.303 (0.0734)	0.479 (0.0849)	0.0753 (0.0237)
Employment guarantee scheme	-0.242 (0.0489)	0.337 (0.0566)	0.0378 (0.0158)
Professional training program	-0.0118 (0.00863)	0.0227 (0.00999)	0.00488 (0.00279)

Some quantitative findings:

1. Democratization results in a 21 percentage point increase in irrigation work programs when the landed dominate.

   When the landless are the majority there is a reduction of 36 percentage points in the irrigation program.

3. Democratization lowers by 24 percentage points guarantee employment schemes when the landed control.

   When the landless dominate demographically there is a 34 percentage point increase in these programs.

Outcomes: Public Irrigation Assets and School Enrollment

Estimates based on the 1971, 1982 and 1999 REDS rounds using the same specification and identification strategy.

The results for infrastructure and human capital investments are similar to those obtained from the continuous panel:

> The interaction between democracy and the landless share is negative and statistically significant for the two public irrigation assets, for the share of village irrigated land and school enrollments.

We again compute the effects of democratization for the three benchmark ρ's.

Table 7
IV-FE Estimates of the Effects of Village Democratization on Public Irrigation Infrastructure, Irrigated Land Share,
School Enrollment, and Landless/Landed Relative Food Expenditures
REDS Villages 1971, 1982, and 1999

Variable/Outcome	Any Public Wells	Any Public Pumps	Share of Irrigated Land	School Enrollment, Boys 10-14	School Enrollment, Girls 10-14	Ratio Landless/Landed Log Household Food Expenditure
Elected Panchayat	1.16	1.21	1.11	0.672	0.353	-1.395
	(0.649)	(0.371)	(0.449)	(0.372)	(0.453)	(0.549)
Elected Panchayat x proportion village landless	-4.16	-2.51	-2.21	-1.63	-1.49	2.44
	(1.10)	(0.629)	(0.668)	(0.550)	(0.669)	(0.793)
Land per household 1971*elected panchayat	-0.00253	-0.00629	-0.00606	-0.00351	-0.00132	0.00740
	(0.00514)	(0.00294)	(0.00321)	(0.00267)	(0.00326)	(0.0760)
Village fixed effects	Y	Y	Y	Y	Y	Y
State-specific time trends	Y	Y	Y	Y	Y	Y
N	441	441	686	697	697	584

Standard errors in parentheses. Observations weighted by village population size in 1971. The first-stage excluded instruments include: amendment stages 1-3, the three stages interacted with each other, the three stages interacted with the village landless share, and interacted with each other, the three stages interacted with village land per household and interacted with each other. The F-statistics (F17, 6996) for the excluded instruments for the elected panchayat, and the interactions of the elected panchayat with the landless share and land per household are 6.46, 8.27, and 11.43, respectively.

Table 8
FE-IV Estimated Effects of Democracy by the Proportion of the Population Landless
on Public Irrigation, Secondary School Enrollment, and Relative Food Expenditures
REDS Villages, 1971, 1982, 1999

Outcome/ρ value	Landed in Control ($\rho=0$)	Landless Majority ($\rho=0.6$)	Landless Minority ($\rho=0.29$, mean)
Any public irrigation wells	1.03 (0.422)	-1.47 (0.368)	-0.182 (0.219)
Any public irrigation pumps	.887 (0.241)	-0.620 (0.210)	0.159 (0.125)
Share of land irrigated	0.795 (0.301)	-0.533 (0.197)	0.153 (0.159)
School enrollment, boys 10-14	0.490 (0.249)	-0.490 (0.163)	0.0161 (0.133)
School enrollment, girls 10-14	0.284 (0.304)	-0.611 (0.197)	-0.149 (0.162)
Ratio landless/landed log household food expenditure	-1.01 (0.384)	0.451 (0.196)	-0.304 (0.195)

The first notable finding is that at the ρ mean of 0.29, there is no statistically significant effect of democratization for any of the five outcomes.

When heterogeneity in the effects of democratization is ignored would in this case falsely conclude democratization has no effects.

For example,

The estimates indicate that moving to democracy affects the share of land irrigated:

at the mean ρ: by an insignificant 0.15 increase.

at $\rho = 0.6$: by a statistically significant 0.53 decrease.

Inequality: Does democratization favor the landless or landed?

The estimates indicate that democracy leads to a 0.30 *decrease* in relative landless food expenditure at the mean landless share but an *increase* of 0.45 when landless are in the majority.

Roads:

Consistent with the findings that building roads facilitates temporary migration of the landless, a higher ρ leads to more road building.

Table 9
FE-IV Estimated Effects of Democracy on Roads by the Proportion of the Population Landless
REDS Villages 1971, 1982, and 1999

Road measure (data set)	Landed in Control ($\rho=0$)	Landless Majority ($\rho=0.6$)	Landless Minority ($\rho=0.29$, mean)
Road work program (REDS 71-99)	-0.275 (0.096)	0.311 (0.112)	0.0082 (0.031)
Pucca road in village (REDS 71,82,99)	-1.04 (0.307)	0.536 (0.294)	-0.280 (0.184)

Conclusions

1. The *dejure* democratization of villages in India appears to have *defacto* moved away from governance by one privileged group

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   Democratization evidently shifted the composition of public goods according to the population shares of interest groups.

2. Neither aristocratic rule nor democracy delivers a composition of public goods that maximizes income in a setting with groups having different economic interests.

3. The effects of democratization on income/growth are heterogeneous.

What do the effects of democratization on Depend on?

A. The existence of groups with differing economic interests.

B. The amount of socioeconomic mobility between groups.

C. The level and type of disparity in interest between groups.

D. Inequality - the relative size of the groups (ρ).

E. The distribution of the benefits from productivity-enhancing public goods across groups (trickle down).

Does democratization increase growth? It depends.