Now that your land is my land . . . does it matter? A case study in Western India

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ABSTRACT. This paper examines the implications of tenancy legislation and privatization of community lands in Goa on the supply of local public goods for soil conservation. In the post-tenancy period our survey reveals an increasing number of farmers being affected by salinity ingress. These findings support the hypothesis that when community institutions break down, individual agents who become new resource owners do not have sufficient incentive to undertake supply of local public goods, which leads to a decline in productivity and affects long-term sustainability.

1. Introduction

Resource management, especially of common property resources (CPRs), is discussed with reference to three institutions: state, community, and the individual (market). While the role of the state has been looked on with suspicion by many economists, the literature on conservation has debated the efficacy of the individual (market) and the community in sustainable resource management (Aoki and Hayami, 1999; Baland and Platteau, 1999; Nugent, 1994; Janvry *et al.*, 1999; Wade, 1987). Concerns have been raised at the market's lack of incentives for long-run resource conservation, and the effects of a high rate of discount on natural resources. Therefore, the focus has shifted to examine how traditional communities have used non-market institutions like social norms, religion, etc. as a means of resource conservation implicitly, using a lower inter-generational discount rate. Empirical evidence of successful conservation seems to indicate that communities play a crucial role in creating the framework for long-term resource use and seem to better define bequest motives than either the state or the market (Agarwal, 2001; Baland and Platteau, 2003; Hayami and Platteau, 1997). The property rights school, on the other hand, has argued that the market would be able to handle issues in sustainability as long as ownership is effective and transactions costs are negligible (Demsetz, 1967).

In this paper we find that security of tenancy, privatization and enhancement of equity, which are considered desirable processes towards increasing cooperation and conservation among resource users, does not seem to occur in Goa when it is at the cost of disenfranchising community institutions. This has implications for agrarian policy in large parts of the developing world where similar circumstances exist.

The next section of this paper briefly traces the agrarian institutional transition in Goa. In section 3 we discuss some findings of the survey, indicating the decline of public works in soil conservation. Section 4 sets up an empirical model to test factors that determine private investment on land. We follow it up by discussing the results and its implications for land management and supply of local public goods in the agrarian economy.

2. Agrarian transition

In Goa, traditionally all the cultivable land was believed to be owned and managed by a community institution called the *Communidades* (also known as the *Gaunkarias*). It is believed that the original settler families of every village recovered lands (*khazans*) over generations and therefore jointly lay claim to these lands (Pereira, 1981). The *communidades* would periodically lease out lands to the highest bidder, and, from the rents earned, undertook various local activities, soil conservation being the primary task. Membership of the *communidade* was, however, restricted to the male descendents of original settler families, called *gaunkars*. Over time the *communidades* became unrepresentative as an institution of local governance as the village population grew. Soon after liberation from Portuguese colonisation (in 1961) the independent state decided to create a new democratic institution, the *Panchayat*, to replace the *Communidades* as a form of local government. The *Panchayat* had as its members all residents of the village, but were not involved in soil conservation measures. The *communidades* thus lost their administrative powers and with the promulgation of the tenancy laws they lost their right to auction the *khazan* lands, which passed on to the farmers who held the last lease. This cut off a major source of finance for them. Subsequently, tenants associations were instituted to substitute for the *communidade*'s task of embankment maintenance (Mukhopadhyay, 2003).

The community and privatisation debate becomes relevant in the Goa case because tenancy legislation in 1964–65 provided security of tenure, and tenants were given the option of buying the leased lands at a fixed price. The community lands of *communidades* were virtually privatized in the post-liberation phase and this created a new community of resource owners. In the pre-liberation era a major part of the cultivable lands of the village were owned by the *communidades* and private lands were largely under the *gaunkars*.[1]

If one were to go by the property rights school, privatization would not change the manner of resource use, since all externalities, which community

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[1] The evolution of private property in Goa is discussed in Mukhopadhyay (2002).

ownership was able to internalize, would also be undertaken by private agents, in this case the tenants and *mundkars*. The equity school would also have us believe that the greater equity among resource users would increase conservation and efficiency. In a similar vein, security of tenure is believed to be a pre-condition for agents to undertake conservation (Holden and Shiferaw, 2002). Measures promoting security of tenure through land purchase in Goa, therefore, should have led to conservation and higher levels of cooperation. The state presumed that cooperation would emerge among the new resource owners, once they (tenants and *mundkars*) got their land titles through tenancy legislation (Tenacy Act 1964 and Rules 1965).

So we can hypothesize that with security of tenure in Goa there would be an increase in cooperation (supply of public goods) and an increase in private investment to improve productivity. The resource owners, knowing the importance of embankments to protect their lands, would cooperate through enabling institutions to ensure their maintenance. While protection of embankments would retain land productivity (by not allowing salinity ingress), private investment by way of mechanization, etc., would help increase productivity.

We therefore need to study two variables to understand the impact of privatization of community lands in Goa – supply of public goods (in this case, embankments) and the level of private investment on land. Since it is difficult to quantify supply of public goods, as far as embankments are concerned, we will use a proxy measure for it – the amount of fallow lands in existence. The lower the investment in embankments, the higher will be the proportion of fallow lands. Unlike Boserup (1965), who felt that farmers keep land fallow in order to restore soil fertility, in the coastal zones, where soil conservation measures are declining, the existence of fallow lands reflect salinity ingress due to decline in the supply of public goods. Thus, fallowing rather than being an investment reflects exactly the opposite – a lack of investment.

We use two sources to indicate a decline of public goods – state-wide information from secondary sources and primary data from a sample survey. The state-wide evidence in the last three decades since land tenancy legislations were enacted reveals that there have been serious failures in soil conservation measures which were earlier undertaken by the *communidades*. The Agricultural Commission of the Government of Goa (1992) found that the tenants associations formed to substitute for the *communidades*' role in soil conservation measures were unable to financially sustain themselves. The panel recorded that of the 138 tenants associations, 16 were defunct and only 97 supplied the panel with some financial accounts, even though they are required under the Tenancy Act to maintain such accounts. Most of these associations were found to be financially bankrupt (GoG, 1992: 43). This is despite the government's assurance to re-imburse any expenses undertaken by the tenants association to maintain the embankments (Section 35 of the Tenancy Act, 1964).

3. A note on the field survey
In order to address these questions in the context of the agrarian economy in Goa, a sample of 360 households covering four villages were studied.

Table 1. *Aggregate distribution of land by type of ownership*

In square mts	Private area	Communidade area	Total area	Fallow area
Mean	1,435.556	3,260.389	4,695.944	805.278
Standard Dev	3,925.917	4,095.174	5,509.844	2,074.356
Sum	516,800.000	1,173,740.000	1,690,540.000	289,900.000

Goa consists of two districts – North Goa and South Goa – which are sub-divided into 11 sub-district level *talukas*. Three villages were chosen from North Goa (Goltim, Malar and Calangute) and one from South Goa (Curtorim). Three categories of households were interviewed – *Gaunkar*s, the traditional descendents of village founders, the tenants who used to rent the *communidade* lands at auction and the *mundkars* who were employed on private agricultural lands. In each village, 90 households were surveyed (30 each from the category of *Gaunkar*s, Tenants and *Mundkars*). All the interviews were conducted in the year 2002–2003.

3.1. Basic findings

The land-holding structure that emerges from the 360 households interviewed reveals total land claims as 1,690,540 sq.m. of which 516,800 sq.m. is under private ownership and the rest (1,173,740 sq.m.) is land occupied by those who held the last auctioned lease from the *communidades*. The *communidade* lands still constitute about 70% of the total village lands, indicating the large share it had in land ownership, even though individual tenants have now claimed rights over them (see table 1).

   Of the total villages lands, the *Gaunkars* now only own about 34 per cent of the total area. Interestingly, of the village private lands, 65 per cent is still owned by *gaunkars*; 78 per cent of the land distributed from the *communidades* is under the tenants (53 per cent) and *mundkars* (25 per cent).

   One can attempt to reconstruct the pattern of land ownership prior to tenancy legislation from the survey data, making some reasonable assumptions. We assume that all the private lands were under the individual ownership of the *gaunkar*s before tenancy legislation and there has been little change in the pattern of ownership of these private lands. Furthermore, all the lands that are now being claimed by the tenants and *mundkars* was earlier under the control of the *communidades*.[2]

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[2] Temples and churches also held sizeable areas of land which were also *communidade* properties but given for upkeep of these institutions. Some land grants were made by the colonial government to religious bodies for their financial support, etc. However, the land ownership data, especially with regard to private lands, is not available (Shastry, 1987).

Table 2. *Land holding pattern*

In square mts	Gaunkar total area	Tenant total area	Mundkar total area
Mean	4,877.000	6,290.833	2,920.000
Standard Dev	6,306.229	5,736.599	3,623.490
Sum	585,240.000	754,900.000	350,400.000

Table 3. *Private land holding*

In square mts	Gaunkar private area	Tenant private area	Mundkar private area
Mean	2,788.333	1,111.667	406.667
Standard Dev	5,857.957	2,753.033	1,258.566
Sum	334,600.000	133,400.000	48,800.000

Table 4. *Communidade land holding pattern*

In square mts	Gaunkar communidade area	Tenant communidade area	Mundkar communidade area
Mean	2,088.667	5,179.167	2,513.333
Standard Dev	3,541.383	4,535.016	3,438.828
Sum	250,640.000	621,500.000	301,600.000

The current survey indicates that the *gaunkars* lay claim to an average of 4,877 sq.m. (of which 2,788 sq.m. is private land). The tenants on average lay claim to an average of 6,290.8 sq.m. (of which only 1,111.6 sq.m. is private land) and the *mundkars* claim 2,920 sq.m. (of which 406 sq.m. is private)[3] (see tables 2, 3 and 4). Given the current land-holding pattern and the assumptions we have made above, we can infer that the *gaunkars* on average owned 2,788 sq.m. each (which they retain), while the rest (tenants and *mundkars*) owned nothing prior to tenancy legislation. The biggest gainers in the agrarian transition have been the tenants at the cost the *communidades*. The *mundkars* have gained too, but not as much as the tenants.

3.2. Privatisation and public goods

The impact of salinity ingress due to decline in supply of public works maintenance is quite large. Of the 360 households surveyed, 62 households reported having to leave lands fallow due to salinity ingress. Many farmers

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[3] The difference between the private claim and total ownership of gaunkars may be attributed to what they retain of land lease titles from the last auction by the *communidades*. The private land titles that tenants and *mundkars* claim today is possibly what they bought from the *communidades* and private land owners in the post-legislation period.

Table 5. *Distribution of fallow lands*

Category	Fallow area (square metres)		
	Mean	Standard dev	% age of fallow
Gaunkars	475	1,229.624	9.7
Tenants	1,275	2,764.458	20.2
Mundkars	665.833	1,864.101	22.8

reported having lost almost their entire agricultural lands. In terms of aggregate loss in area of the three categories, it is the tenants who have suffered the most. In terms of the proportion of area lost by category, the worst affected by the salinity are the *mundkars* – those who benefited least from the land reforms. As much as 22.8 per cent of *mundkar*-owned land was affected in comparison to 9.7 per cent of the *gaunkars* and 20.2 per cent of the tenants (table 5).

This clearly indicates that the move to provide security of tenure did not lead to greater supply of public goods. In fact it led to a decline. This is indicated by the state-wide secondary data and confirmed by the survey results. So we reject our null hypothesis that privatization has led to greater public investment through cooperative behaviour among the new resource owners.

We now turn to the second question: Did this lead to an increase in private investment? Direct measures of private investment on land were not available. Instead we used a proxy measure for strategic choices of the farmer, in the form of a binary variable which asked if the agent has adopted mechanisation or not.

4. Empirical model
We now set up an empirical model to answer the above question. Mechanisation (*Me*) is expected to be dependent on the category of resource users, land-holding size (*Tot_Ar_Pc* – Size of land holding with respect to family size, Area per capita), the proportion of land lying fallow and the number of years it as been fallow (*Fal_Yrs* and *Propn_Fal*), the educational level of the head of the household (*Edu*), income from other sources (*Or_Y*), and the age of the head of household (*Age*).

It is hypothesized that:

(a)   The major beneficiaries of the land re-distribution – the tenant (*Tnt*) and the *Mundkar* (*Mnkr*) – would adopt mechanization to boost agricultural incomes (expected sign of coefficient – positive). Both these are qualitative variables, and *gaunkars* are the control category. However, an interactive dummy for agriculture (AG_D) was introduced to ensure that the tenants and *mundkars* being considered are those who are involved in agriculture (expected sign of coefficients – positive).

(b)   The larger the size of land holding with respect to size of family, that is total area per capita, the greater the incentive to adopt mechanization (expected sign of coefficient – positive).

Table 6. *Summary logit regression results*

Dependent variable: *ME*
Input records: 360

Log likelihood: parameter	−181.643 Estimate	S.E.	t-ratio	p-value	Odds ratio	95.0% bounds Upper	Lower
1 *CONSTANT*	−2.572	0.830	−3.101	0.002			
2 *EDU*	0.110	0.138	0.796	0.426	1.116	1.463	0.852
3 *AGE*	0.007	0.011	0.693	0.489	1.007	1.029	0.987
4 *Tnt*AG_D*	2.112	0.345	6.130	0.000	8.268	16.244	4.208
5 *Mnkr*AG_D*	2.156	0.378	5.701	0.000	8.638	18.127	4.116
6 *FAL_YRS* PROPN_FAL*	−0.239	0.059	−4.052	0.000	0.787	0.884	0.701
7 *TOT_AR_PC*	0.001	0.000	4.691	0.000	1.001	1.001	1.000
8 *OR_Y*	0.305	0.107	2.864	0.004	1.357	1.672	1.101

Log Likelihood of constants only model = LL(0) = −247.730
2*[LL(N)-LL(0)] = 132.174 with 7 df Chi-sq p-value = 0.000
McFadden's Rho-Squared = 0.267

(c)   The greater the level of land degradation represented by the proportion of fallow land each farmer has (*Propn_Fal*) and the number of years the land has been fallow, the weaker the incentive to mechanize (expected sign of coefficient – negative).

(d)   The higher the farmer's income, the greater the incentive to invest, that is the impact of income on mechanization is expected to be positive. Higher incomes should make it easier for the farmer to adopt better technologies. However, the amount of investment in agriculture would be dependent on alternative income-earning opportunities. If returns from non-agricultural investment are higher, then, at the margin, one should expect an inverse relationship between non-agricultural incomes and mechanization. We use non-agricultural income as one of the independent variables to compare the returns in agriculture. If the coefficient is positive, then marginal returns from agriculture are higher, but if it is negative, then it implies there will be an inverse effect on mechanization.

(e)   The higher the educational level of the agent, the greater the incentive to mechanize (expected sign of coefficient – positive). The better educated the farmer is, the more inclined will he be to adopt modern methods of cultivation.

(f)   The older the head of the household, the less likely they are to accept modern technology (expected sign of coefficient – negative). It is normally anticipated that younger farmers are more open to experimenting with newer technologies.

We set up a logit function to test the hypothesis as follows and the regression results are provided in the table 6.

$$Me = f\{Edu, Age, Tnt^*Ag\_D, Mnkr^*Ag\_D, Propn\_Fal^*Fal\_Yrs, Tot\_ArPc,$$
$$Or\_Y, Fal\_Yrs^*Propn\_Fal\_Ar\}$$

Age and education (of head of household) do not seem to play any significant role in determining the adoption of mechanization. All the variables, excluding education (*Edu*) and age, are found to be significant. The coefficient of non-agricultural income is significant at the 95 per cent level, while the rest are all significant at 99 per cent level.

The signs of the co-efficients of all the variables are as expected. The coefficient of the interaction variable (fallow years and proportion of fallow area) is negative. The proportion of fallow area and the number of years that land lies fallow inversely affect adoption of mechanization.

The coefficients associated with tenants and *mundkars* engaged in agriculture is positive. This implies that tenants and *mundkars*, the major beneficiaries of the land redistribution, are more inclined to adopt mechanization as anticipated. This can be interpreted as an attempt by tenants and *mundkars* to boost their incomes by making private investments to increase land productivity.

Size of land holding positively impacts on the adoption of mechanization – the larger the per capita ownership, the greater is the incentive to mechanize.

McFadden's rho-squared (a transformation of the LR statistic which is similar to the R-squared) is 0.267, which is a satisfactory fit.[4]

This result is of interest to us. The tenants and *mundkars* show greater propensity to make positive expenditures towards improving their productivity at an individual level. However, their failure to arrive at a cooperative solution leads to a reduced supply of public goods and a decline in embankment maintenance, causing salinity ingress. We have two indicators of this – the financial bankruptcy of the tenants associations and the large proportions of land that have been rendered fallow due to salinity ingress.

5. Discussion

What explains this inadequate allocation by tenants for maintenance of embankments and the failure of a cooperative solution to emerge under the new institutional framework? And why did greater democratization of village administration through the Panchayats not produce greater cooperation?[5]

This brings us to the Seabright (1994) question: do people who have a history of cooperation have a greater probability of cooperation now, and

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[4] Even though Mcfadden's Rho-squared tends to be much lower than the R-squared, a low number does not necessarily imply a poor fit. Values between 0.20 and 0.40 are considered very satisfactory (Hensher and Johnson, 1981).

[5] One criticism levelled against the *communidades* was that it was a non-representative form of local governance, since it only permitted the *gaunkar*s or *jonkars* (shareholders) to sit in the village assemblies, which took all administrative and political decisions regarding the village affairs.

do people who have no history of cooperation before have less possibility of cooperation now?

In the institutions that we have described above, the *gaunkars* under the *communidade*, had a history of cooperative management of land resources. The tenants, though not necessarily new agents in the system, did not have the managerial responsibility or ownership rights in the system till security of tenure was established through the 1964–65 Tenancy Act and Rules. While the Tenancy Act created a new set of land owners, leading to greater homogeneity of land asset ownership, this did not automatically lead to a higher cooperative solution. This is despite the backing of the state for creation of these new institutions – the Panchayats and the tenants associations.

We take issue with two of Baland and Platteau's (2003) findings from their extensive survey of empirical literature on the role of the state and equity in resource ownership. Our findings confirm that greater homogeneity in resource distribution does not necessarily lead to better management of resources.

On the issue of the role of the state, our findings compliment that of Baland and Platteau (2003). They argue that state support to local institutions may or may not lead to better cooperative outcomes and help communities better manage resources. In Goa, the state oversaw the disenfranchisement of a traditional local institution (*communidade*) and created two new institutions – the Panchayats (an institution with universal membership) and the tenants association as a resource management institution. The idea was to bring greater homogeneity to land ownership and provide land to the tiller. The state additionally took responsibility to financially support the tenants associations in the maintenance of embankments. However, the new associations were not able to manage the public works.

The resultant outcome could be described as a coordination failure. In the absence of social capital among agents with no prior history of cooperation a Pareto inferior situation has emerged (Seabright, 1994). As anticipated by Baland and Platteau (1998, 1997) privatization of communally owned lands left little incentive for individual agents to internalize the externalities, which was earlier being done by the *communidades*, and the resource has been transformed from a 'regulated' to an 'unregulated' one. By 'regulated' here we mean there are regulations regarding both membership and the manner of resource use, that is there is an authority structure (Baland and Platteau, 2003). These constitute some of the ideal conditions for efficient management of a resource or the production of a local public good (Libecap, 1989; Baland and Platteau, 1998). The intervention of the state and the attempt to create new institutions by decree has caused the authority structure to disappear and the situation is now one of 'unregulated' decentralized interactions among landholders. Unfortunately, conditions of equal distribution do not necessarily lead to an efficient outcome (Baland and Platteau, 2003) – in this case the production of a local public good, the embankments. This is because there seems to be no incentive for an individual agent or group of agents to bear the cost of provision of the public good and internalize a sufficiently large proportion of the externalities produced by the maintenance of local public goods, the embankments and sluice gates.

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