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Summaries

Poverty, property rights and collective action: understanding the distributive aspects of common property resource management

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Poverty, property rights and distributional implications of community-based resource management are becoming a major subject of discourse in issues of, local-level collective action. It is usually hypothesized that poor people are heavily dependent on natural resources and they derive higher income from common pool resources (CPRs) than relatively better-off households. Conversely, scholars argue that compared with non-poor, poor people may depend more on common resources, but in absolute terms their dependency is lower. Given this polarity of opinion, this paper examines the contested role of group heterogeneity and equity of resource distribution in community-based property rights regimes in order to understand whether community forest (CF) programs enhance the access of poorer households to the local commons.

The economic analysis of household-level benefits from CFs suggests that poorer households are currently benefiting less than the less poor households. Although, both annual average gross and net income from CFs is higher for less poor households, dependency of the poor on CFs is slightly higher than that of less poor households. The average 'poor' household obtains Nrs 7,756 as gross income from CFs annually, while the more 'rich' households obtain on average Nrs 24,466 per year. In terms of net income, the poor, on average, obtain 5 per cent of total household income from CPRs, middle-income households obtain 8 per cent of total income from forests, and the most well off households obtain 4 per cent of their total income from forests. When net income from CFs across these income categories is compared, then an interesting inverted U-shaped relationship emerges – the relative dependence on forest resources declines as income increases. However, more systematic and rigorous analyses are required to provide strong conclusions on this aspect.

It is found that socio-economic attributes of households are directly related to income from the CFs. Analysis of the determinants of household-level income from CFs, through regression analysis, indicates a strong positive relationship between private endowments of households and benefits of CFs. High caste households benefit more from the CFs and

better educated households depend less on forest resources. Female-headed households benefit less from CFs and this further aggravates the inequity of distribution of benefits of the CFs. Results of this paper reinforce the notion that households with land and livestock assets gain the most from CFs. The study points out a number of recommendations to improve the CF management in Nepal, including emphasis on non-timber forest products, more and equitable representation of women and disadvantaged groups on the forest management committee, and introduction of transferability of rights that allows less-endowed households to also benefit from CFs. Voluntary exchange of rights with overall restriction of resource use may ensure increasing access of poorer households to common property forests.

Rise, fall, and persistence in *Kadakkodi*: an enquiry into the evolution of a community institution for fishery management in Kerala, India

ANTONYTO PAUL

Coastal fisheries have the characteristics of Common-Pool Resources (CPRs) and are subject to the so-called problem of CPR dilemmas. For resolving such dilemmas, CPR management literature emphasizes the inevitability of institutions (both formal and informal). However, the factors and processes of development of institutions are not adequately known. The conventional conception of institutional change as a spontaneous movement towards more efficient forms under the pressure of relative prices, albeit important, is not a sufficient explanation. And a search for a *more complete* explanation of evolution of institutions as endogenous to the economic system is in progress. The present study is primarily an attempt to contribute to this line of enquiry, by analysing the evolution of an age-old fishery management institution called *Kadakkodi*.

Kadakkodi, or *Kadal kodathi* (which literally means *sea court*) is a traditional institutional arrangement in the marine fishery sector of Kerala. It was intended to provide not only a conflict resolution mechanism, but also a resource management system, developed and administered by the community of fishermen.

This paper analyses the nature and functions of this institution and identifies the factors and processes that determine the trajectory of its evolution, based on the primary survey of 30 coastal villages of Kerala and on relevant secondary data. Our study reveals an interesting geographical pattern in the evolution of *kadakkodi*. Two extreme situations exist: the southern coast where the system did not develop at all and the northern-most coastal district where the system claims long uninterrupted functioning. In between these two extremes lies the rest of the northern

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coast where the system was strong in the past, but has faced either disintegration or restructuring. It is found that factors, such as resource endowments, technology, cultural endowments, and the already existing institutional structures, have played a crucial role in determining these disparate institutional developments. Levels of social capital among the resource users and the presence of able and fair leadership are also found to be important.

Along with the strengths of *kadakkodi*, the study also exposes the weaknesses of the system, in the wake of increasing technological externalities, which points to the need of developing complementary formal institutions for the effective resolution of CPR dilemmas.

Different property rights regimes in the Lake Victoria multiple species fishery

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Ecosystem complexity is recognized in the Lake Victoria fishery by studying a two species predator–prey model for perch and dagaa, which accounted for just under 90 per cent of Kenya's harvested production in a recent year. Dagaa are the prey of the perch and each population is governed by logistic growth with an additive interaction term involving both species.

We analyze this fishery under either a free entry or a property rights regime, exemplified by individual quotas. The interesting result is that exogenous price changes affect harvest and stocks differently under the two property rights regimes in one-half of the eight possible options and for a further two more cases when there are low equilibrium populations. For example, a landing tax increases harvest when stocks are low under free entry but decreases harvest under optimal management schemes. Thus a national tax policy would have opposite results for fisheries under different management regimes. We argue that it will take bottom–up management rather than a top–down approach and we discuss a bottom–up management experiment in the context of Lake Victoria fisheries.

Herders response to acute land pressure under changing property rights: some insights from Kajiado District, Kenya

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Land pressure is most acute in marginal pastoral areas, where livestock husbandry tends to have adverse effects on the environment, often

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perpetuating poverty. Pressure on land is evident from a steady decrease in the ratio of cattle to small stock, which is an indicator of falling per capita stock holding and a steady increase in the ratio of occupied to unoccupied Maasai huts, indicating that the Maasai are becoming more sedentary. The consequence of increased land pressure is not only increased persons/land ratios, reduced fallow periods, land degradation, and changing farming systems, but also pressure on the laws and customs, which have in the past assured farmers of land rights.

Overgrazing and other forms of land pressure are caused by increased animal and human population pressure, changes in grazing patterns due to privatization of land, losses of grazing lands to agriculture, limited mobility due to political insecurity, absence of mechanisms for smoothing number of stocks through the seasons and crop and livestock raids by wild animals. The strategies adopted by herders under such circumstances are broad and varied ways of diversifying livelihoods and lifestyles are undertaken in order to minimize environmental risks and uncertainty.

This paper employs the Boserup theory of induced institutional innovations to explore the determinants of three strategies: crop cultivation, investment in land improvements, and migration with livestock among herders in Kajiado district, Kenya. The paper uses both primary and secondary data to test the hypotheses that, controlling for other determinants, property right regimes constitute the main determinant of the strategies adopted by herders. The analysis is based on a cross section of 570 field observations, 69 per cent falling under private property regimes and 31 per cent under common property resources. We employ the probit regression framework to explain each strategy. We estimate reduced-form models for each dependent variable due to lack of proper instrumental variables to estimate the underlying structural equations.

The results indicate that private property rights, educational attainment, and availability of water are important determinants of the probability of adopting land cultivation, investment in land improvements, and migration in search of pasture and water. Important policy issues include privatization of common property resources and improvement in the level of education through both formal and informal education. Our analysis also implies that it would be important to explore ways of increasing the availability of water in the district in order to encourage crop cultivation, investment in land improvements and to reduce migration.

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

PRANAB MUKHOPADHYAY

This paper seeks to address the broad question of whether individual resource ownership is better for conservation and sustainability or not.

This touches upon the debate on privatization of commons, because in Goa there has been security of tenure since 1965 but at the cost of community lands, which were managed by an institution called the *communidade* (or *gaunkaria*). Goa is a small state on the western coast of India and has had a long history of community management of agricultural lands, predating the Portuguese colonization (1510–1961). The *communidades* were run by *gaunkar*s who were the male descendents of the original settler families of the village. The *gaunkars* lay joint claim to the village lands and auctioned them at periodic intervals to cultivators. From the rents earned from the auction, they used to maintain the embankments and sluice gates (soil protection public works) among other things. Most of the agricultural lands in Goa are reclaimed lands (*khazans*) and, therefore, soil conservation measures assume importance for maintenance of the agrarian economy.

After Goa joined the India union in 1961, Agricultural Tenancy Acts and Rules were passed in 1964–65 giving permanency of tenure. The *communidades*, thereafter, lost effective control of the village agricultural lands. Two new institutions were created in post-Independence rural Goa – the Panchayats and Tenants' Associations. The establishment of the panchayats democratized management of village affairs as every member of the village could participate. The panchayats were responsible for providing local-level governance and the tenants associations were supposed to undertake maintenance of soil conservation works. Both seem unable at this point to fulfil the work of the *communidades*. This has created an institutional vacuum where no equivalent rural institutions have emerged to take charge of the functions undertaken by the *communidades*.

Our study finds that new owners of the land (the tenants and *mundkars*) are keen to invest in individual productivity enhancing mechanization but were unable to cooperate and contribute to maintaining the supply of local public goods, such as maintaining embankments for soil conservation, which is indicative of institutional failure.

State regulation versus co-management: evidence from the Cochin Estuarine Fisheries in India

JEENA T. SRINIVASAN

In many developing countries, the failure of centralized management of local-level natural resources has been driving them to reconsider, amend or even reverse their policies. Amongst the various alternatives available, several merits have been attributed to co-management, where there are relative roles for state and user groups to play in performing basic resource management functions. This means that in a move towards co-management the relative roles of state and users have to be redefined. For this, on the one hand, knowledge about the characteristics of the resource users

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is essential for the state to revamp its policies. On the other hand, an understanding of the collective action potential of the users is necessary, as any development of institutional arrangements requires investment of time and other resources by the members of the community. In the process of defining or changing property rights, the bargaining stands adopted by various parties depend upon how they view their welfare will be under the new arrangement relative to the status quo. Here the expectation of the capture of rent acts as an incentive for users to join a collective action. Any apprehension of being unable to capture rent, especially when the users are heterogeneous, may force them to prefer the existing system and over exploit the resource. Under such a situation co-management may have to still grapple with lack of well-defined property rights. Against this background, the paper examines the property rights of the Cochin estuarine fisheries, Kerala in India, where state regulation has failed and involvement of users in its management is sought.

A web of interdependent common property, open access issues, prisoner's dilemma, adverse selection problems and regulatory failures have been identified as the causes for the ineffectiveness of state regulation. Analysis of user characteristics, using the two-stage estimation procedure, throws policy signals as to how the state can regulate resource use under co-management. Licences, which give access rights and greater awareness regarding conservation rules to the fishermen are an important instrument to which the state can resort under co-management. However, the state must be cautious when tackling those users whose only interest is to maximize their current returns and who are concerned neither about access rules nor about conservation rules.

An analysis of the users' willingness to take part in collective action for resource conservation has also been carried out, as their role is equally important in co-management. It is seen that about 58.8 per cent of the fishermen were ready for collective action. The logit analysis of the determinants of collective action by the fishermen shows that, while certain types of heterogeneities favor collective action, some are deterimental to it. For example, those who already possess fishing licences, those belonging to a traditional fishing community, those who are optimistic about the success of co-management, and the fixed engine users are supportive of collective action by the fishermen. This subset of fishermen can be considered as the critical mass needed to initiate a collective action. However, it should also be noted that the distributional implications led at least some fishermen like those belonging to the traditional fishing community and those aware of the conservation rules to oppose or block this institutional change. This implies that even if participants initially get to agree to co-operate and share any rents from conservation, significant prisoner's dilemma will soon occur returning the resource to its current state. In short, the failure to take into account the impact of various types of hetergoeneties may lead co-management to grapple with lack of well-defined property rights and may result in the continuance of the over exploitation of the resource.