



Analysis

Basic capability effect: Collective management of pastoral resources in southwestern Kenya



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ABSTRACT

Collective action, such as common resource user groups, has gained importance in the management of pastoral natural resources. This study aims at analyzing the effects of basic capabilities, among other factors, on households' decisions to participate in collective management of pastoral resources in Narok County, Kenya. A zero-inflated beta model, in addition to alternative econometric model specifications, is applied on cross-sectional data collected through a household survey. The results confirm the key role of the capability concept in explaining the management of natural resources. Increased basic capabilities, that is, the ability to achieve some minimally acceptable levels of functioning reduce cooperation levels in collective management of pastoral resources. Social capital, neighborhood social influences, resource system characteristics, socioeconomic factors and institutional factors also emerge as key determinants of collective management of pastoral resources. Policy implications drawn by this study encourage strategies to build social capital and facilitate adoption of improved range management technologies where communal management of land is likely to be abandoned for exclusive property rights.

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1. Introduction

Co-management of pasture resources under collective ownership systems has gained importance in managing and structuring the use of rangelands in arid and semi-arid areas (Banks, 2003; Hundie and Padmanabhan, 2008; Mwangi and Meinzen-Dick, 2009; Ostrom, 1990). Under these systems of joint provision and exploitation of range resources, pastoralists have access to diverse livelihood options to hedge against risks (Kimani and Pickard, 1998; Mwangi and Meinzen-Dick, 2009). The risks mainly emanate from low and erratic rainfall and variations in pasture productivity characterizing the arid and semi-arid lands (ASALs). With regard to diverse livelihood options, communal ownership of rangeland resources allows users to have access to a larger land area that provides water and pastures in both the dry and wet seasons. This serves as an insurance against individuals incurring losses, especially during dry periods (Mwangi and Meinzen-Dick, 2009). As further illustrated by the authors, collective rights to land and land resources in range areas provide a more equitable way of distributing variable resources and are associated with significant savings on transactions and production costs (Mwangi and Meinzen-Dick, 2009). In addition, collective systems present the necessary scale required to maintain the ecological function of the heterogeneous land surfaces associated with rangelands (Baland and Platteau, 1996; Meinzen-Dick and Mwangi, 2009; Ostrom, 1990). The system provides

the scale necessary for mobility that supports more sustainable livestock production in marginal environments (Mwangi, 2009).

On the other hand, redefinition of traditional land use arrangements from communal ownership to exclusive property rights has been observed to result in fragmentation, a key cause of rangeland degradation (Amman and Duraipah, 2004; Flintan, 2011; Galaty and Ole Munei, 1999; Rutten, 1992). Fragmentation of rangelands results in the loss of flexibility of livestock movements. This disrupts the seasonal movements of livestock necessary to access resources (water and pastures) that are heterogeneous in space and time (Flintan, 2011). Restricted mobility of livestock has been shown to lead to the loss of the opportunistic spread of grazing pressure and ultimately leads to the overuse of resources in the confined areas (Boone and Hobbs, 2004; Hobbs et al., 2008; Meinzen-Dick and Mwangi, 2009). Fragmentation also occurs with the loss of land, especially in well-watered areas, to alternative land uses such as crop farming. Well-watered areas (i.e., dry season grazing areas) provide grazing relief in the marginal areas (wet season grazing areas), particularly during the dry seasons (Wade, 2013). Thus the loss of well-watered areas subjects the marginal areas to serious environmental degradation through depletion of biomass, loss of biodiversity, and soil erosion (Mireri et al., 2008; Mwagore, 2003). This undermines the capacity of pastoral communities to sustainably use the ecosystems as well as deal with risks such as droughts.

While the benefits of collective management of natural resources such as rangelands are clear, what remains unclear are the conducive factors to successful collective actions. Collective management of natural resources does not always emerge, and thus attention by a number

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of studies on factors either facilitating or hindering participation in collective action emerges (Agrawal, 2001; Dayton-Johnson, 2000; Gebremedhin et al., 2004; Meinzen-Dick et al., 2002; Ostrom, 2009; Willy and Holm-Müller, 2013). While there has been some general consensus on the role of certain factors, such as the number of users, importance of the resource system to users, and mobility of the resource system (Agrawal, 2001; Baland and Platteau, 1999; Ostrom, 2009), the role of some factors is debatable. For instance, on one hand, social networks and social participation, which are key elements of social capital, have been identified to enhance individuals' interactions in societies and facilitate participation in collective action (Gebremedhin et al., 2004; Willy and Holm-Müller, 2013). On the other hand, social capital may bring about subjective norms and may affect collective action negatively (Ajzen and Fishbein, 1980). For example, perceived social pressure to opt for subdivision of commonly managed pastures would hinder the collective management of pastoral resources. Market orientation has also been found to affect the capacity of communities to manage resources collectively. It has been found that, in some market-integrated societies, cooperative behavior prevails. In these environments, markets have been found to foster social interactions, leading to the evolution of norms that influence individual values and returns to relationship-specific investments (Bowles, 1998). However, markets may result in competitive environments undermining collective action (Agrawal, 2001; Carpenter and Seki, 2005). The composition of resource users within a group is also likely to affect collective actions in natural resource conservation. While some studies argue that inequalities in wealth within a community facilitate collective action in overcoming social dilemmas (Baland and Platteau, 1999, 2007; Naidu, 2009), others argue that inequalities may lead to low levels of collective action and cooperation (Dayton-Johnson, 2000; Gebremedhin et al., 2004; Janssen et al., 2011; Johnson and Smirnov, 2012).

The seemingly inconsistent results highlight the importance of the context in which collective action occurs (Baland and Platteau, 2007). This paper aims at contributing to the literature on factors affecting the collective management of natural resources. The study provides evidence on the role of basic capabilities as a determinant of collective action in communal grazing land management in a semi-arid setting. Capabilities, as defined by Krishnakumar and Ballon (2008), refer to the ability to achieve and relate not only to the opportunities that individuals access but to also the opportunities that one could potentially have access to (Ballet et al., 2015). Basic capabilities, as defined by the UNDP (1997), refer to the opportunity to achieve some minimally acceptable levels of functioning – the presence of some basic capabilities to function. Functionings, on the other hand, refer to the various valuable things that an individual manages to do or be, that is, the doings and beings of an individual (UNDP, 1997; Krishnakumar and Ballon, 2008).

As illustrated by Sen (2009), the important components of human capabilities relate to the well-being of individuals, the role of individuals in influencing economic production, and the role of individuals in influencing social change. Although these components are not directly observable, they do manifest themselves in observable functionalities (Krishnakumar and Ballon, 2008; Bérenger and Verdier-Chouchane, 2007). Capability constraints curtail the ability of individuals to utilize the opportunities available to them (Ballet et al., 2015; UNDP, 1997). In the context of rangeland resource management, the geographical nature of the ecosystems (arid and semi-arid lands) narrows the range of opportunities that individuals have at their disposal to exploit the ecosystem. However, individuals' basic capabilities further determine individuals' capacity to exploit the pasture resources in more ways than one (grazing), and this leads them to make certain choices. The indigenous people residing in Kenyan rangelands primarily rely on common resource ownership systems of livestock production to sustain their livelihoods. The inhabitants, however, have been observed to react to increased opportunities to promote their economic well-being (Campbell et al., 2003, 2005). With increased opportunities that one

can access with the exclusive appropriation of the resource pie and ability to exploit them, an individual cooperating in common resource ownership is likely to exit and opt to exploit the potential higher benefits.

In Kenya, there has been a growing body of research on collective action among smallholder farmers (Andersson and Gabrielsson, 2012; Fischer and Qaim, 2012; Kariuki and Place, 2005; Narrod et al., 2009; Willy and Holm-Müller, 2013). However, only a few studies focus on collective action in pastoral drylands (Mwangi, 2007, 2009), with even fewer empirical studies existing (Nduma et al., 2001) and none illustrating the contribution of basic capabilities, an important factor explaining cooperation (Ballet et al., 2015). The present study fills this important gap in this field of research, not only in terms of identifying the causal relationship between multiple factors and the collective management of pastoral resources but also in showing how basic capabilities impact collective action. The crossing between basic capabilities, among other factors, and participation in collective management of grazing lands is thus the subject of analysis in this paper. The objective is modeled in two separate questions: Which factors affect (1) participation in collective management of pastoral resources and (2) the extent of participation? To achieve the stated objective, the paper applies fractional variate estimation procedures to data collected in a household survey among randomly selected agro-pastoral households in six different divisions in Narok County, in Kenya.

The rest of the study is structured as follows: In Section 2, I present the institutional developments in natural resource management in the study area. Section 3 presents the conceptual and theoretical frameworks in addition to the empirical model. Section 4 describes the location of the study area and data collection methods. Section 5 presents regression results, while Section 6 discusses the results. Lastly, Section 6 draws policy implications and concludes the study.

2. Understanding Institutional Developments in Natural Resource Management in Narok County

2.1. Background

Narok County is located on the southwestern part of the Rift Valley Province of Kenya. The county, a semiarid region, lies between latitudes 34°45'E and 36°00'E and longitudes 0°45'S and 2°00'S, with annual precipitation ranging from 500 to 1800 mm and local variations in topography playing a major role in the distribution patterns (Ojwang et al., 2010). The county has three districts covering an area of about 17,933.1 km², with an estimated population of 850,920 according to the 2009 census, and a population density of 47 people/km² (Republic of Kenya, 2010). Most of the region, especially the central part of the county, is characterized by harsh ecological conditions, resulting in low productivity. Farming is only suitable along the borders (Jaetzold et al., 2009). Livestock production remains the key component of agricultural production in Narok South and the lower parts of Narok North, with pastures forming the main feed for livestock. In addition to serving as a means of livelihood, livestock production plays a crucial role in the pastoralists' traditional social setting as a sign of wealth (Kaimba et al., 2011). The county supports one of the richest masses of large herbivores worldwide, including migratory wildebeest and a host of associated grazers, browsers, and predators (Ojwang et al., 2010).

In the county, as is the case with the rest of the country, the political economy context is closely linked to the processes of transformations in the institutions governing land ownership and land use (Amman and Duraipapp, 2004; Campbell et al., 2003; Mwangi, 2009). In the pre-colonial era, the area was mainly home to the Maasai pastoralists who practiced nomadic pastoralism characterized by movement of livestock within seasons in search of pastures, water, and incidence of disease (Campbell et al., 2005; Kimani and Pickard, 1998). Livestock production formed the basis of their economic livelihoods (Campbell et al., 2005; Mwangi, 2007; Nyariki et al., 2009). The livestock production system

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