

Managing Resources in Erratic Environments: An Analysis of Pastoral Systems in Burkina Faso, Niger and Ethiopia

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BACKGROUND

In the semi-arid regions of Burkina Faso, Niger and Ethiopia, livestock is the predominant production activity, though cropping can also be important particularly in Niger and Ethiopia. The ability to move livestock to different pastures is a key strategy for mitigating exposure to erratic rainfall, and the reliance on access to a wide range of pasture resources has long been essential to the viability and sustainability of such systems. Various types of common tenure regimes facilitate the herd mobility.

Nonetheless, while the flexibility inherent in such common tenure systems enables herders to cope with different rainfall patterns and thus limits their exposure to this risk, one potential cost to such systems may be in terms of the use and management of the natural resource base. As is well known, common resources may be subject to externalities; and these externalities open up the possibility that resources will not be well-managed. Thus, there may be a trade-off in terms of flexible access to mitigate risk and the use and management of common-pool pastures.

METHOD

We looked at three community-level outcomes that can be affected by both climate variability and by externalities generated when managing the commons is costly. With respect to climate variability, we expect that stock densities on home pastures will be lower, herd mobility will be higher and lands allocated to private crop activities will be lower (and thus the size of home pastures will be greater). With respect to cooperative capacity, we expect that stock densities will be lower, herd mobility lower, and that more lands will be allocated to private crop activities.

RESULTS

Empirical results indicate that there are some general lessons to be drawn. First, greater cooperative capacity does indeed lead to lower stock densities and greater mobility. Cooperative capacity has a more limited impact on land allocated to private uses vs. common pastures; though its impact is particularly strong in Burkina Faso. Also interesting to note is the fact that the capacity of communities to manage pastures and

allocate land to its best use varies greatly both within and among countries. Factors that are generally associated with greater cooperative capacity include relatively small community size, more equal distribution of wealth, and fewer adults migrating for wage work, all of which should reduce negotiation and enforcement costs of undertaking collective action. Other factors affecting cooperation differ across countries. For instance, external pressure to use community resources appears to have a much greater impact on cooperation in Ethiopia and Burkina Faso than in Niger. Higher productivity rangelands and higher effective livestock prices are associated with greater cooperative capacity in Ethiopia, but have no impact in Burkina Faso. This evidence suggests that more favorable livestock market conditions either increases cooperative capacity or has no impact; in either case, there is no evidence to suggest that better market conditions erodes this capacity.

Second, there is little evidence to suggest that livestock owners accumulate larger herds to mitigate vulnerability to rainfall shocks in the high variability environments. Our results instead suggest that herd sizes do increase with rainfall variability at relatively low variability, but decrease precisely in the higher variability environments. In other words, we would expect that policies and programs that directly “insure” livestock owners – through feed subsidies in response to drought, for instance – would likely lead to larger herds precisely in the environments subject to the greatest variability. We must emphasize that our results are consistent with this latter hypothesis, but, given the one-period nature of the survey, we did not test this hypothesis directly. This is still a contentious issue, since a wide range of researchers, policymakers, and indeed, herders themselves, believe that holding onto more livestock is a strategy to mitigate the impact of climate shocks, such as drought.

POLICY IMPLICATIONS

Results presented here imply that policymakers designing crises mitigation strategies – as are many governments that are signatories to the UN Convention to Combat Desertification – must carefully consider insurance and crises mitigation mechanisms that do not lead to dramatic

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increases in the national herd. Not only do policymakers need to consider the impact of such programs on herd size, but also on herd mobility. Mobility remains an important part of these systems; and our results indicate that current rainfall patterns – and thus locally available feed resources – heavily influence the extent of herd mobility. Given the rather complicated patterns of herd mobility into and out of community areas in Ethiopia, we were not able to gather good enough data to include this variable in the statistical analyses. Still, more than 84% of the communities relied on mobility for at least part of the previous year, and in the 12 communities where data was quite good, herds were mobile for nearly 40% of the year. The number of communities where at least some members engaged in herd mobility is lower in Niger and Burkina Faso, but mobility is still practiced in more than 40% in both countries. And, as noted above, better cooperative capacity within communities supports greater herd mobility. Nonetheless, herders' rights to access traditional grazing areas are generally eroding everywhere. Results indicate that communities with more traditional pastoralists do tend to rely more heavily on herd mobility, but

the impact is weak and not robust across specifications. Thus, pastoral land tenure and drought mitigation policies will need to take into account the continued reliance on herd mobility – even by those not considered to be “traditionally” pastoralist.

Further readings:

N. McCarthy, C. Dutilly-Diane, B. Drabo, A. Kamara and J. Vanderlinden. 2004. Managing resources in erratic environments: An analysis of pastoral systems in Burkina Faso, Niger and Ethiopia. IFPRI Research report 35. Washington DC: IFPRI.
<http://www.ifpri.org/pubs/abstract/135/rr135cover.pdf>

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