

A PhD dissertation on

# Incomes and Asset Poverty Dynamics and Child Health among Pastoralists in Northern Kenya.

By  
Samuel Kahumu Mburu



Chair for Household and Consumer Economics  
Institute of Health Care & Public Management  
2016

Submitted in partial fulfilment of the requirements for the doctorate degree in Economics “Dr. oec. in Economics” to Faculty of Business, Economics and Social Sciences, University of Hohenheim, Germany.

## **Chapter 5: Summary of findings**

The following section gives a summary of findings. In chapter one we identified the levels, sources, and trends of household incomes across the five survey waves. We also estimated and compared the income and asset poverty levels. Income poverty was estimated using imputed household income relative to the adjusted poverty line and asset poverty using a regression-based asset index and tropical livestock units (TLU) per capita. Our results indicate that keeping livestock is still the pastoralists' main source of livelihood, although there is a notable trend of increasing livelihood diversification, especially among livestock-poor households. Majority of the households (over 70%) are both income and livestock poor with few having escaped poverty within the five-year study period. Disaggregating income and asset poverty also reveals an increasing trend of both structurally poor and stochastically non-poor households. The findings show that the TLU-based asset poverty is a more appropriate measure of asset poverty in a pastoral setting.

In chapter two we explored the household welfare dynamics among pastoral households in the study area. First, we developed a microeconomic model to analyze the impact of a shock (e.g., a drought) on the behavioral decisions of pastoralists. Secondly, we estimated the existence of single or multiple dynamic equilibria that may constitute an asset poverty trap. We used the tropical livestock units (TLUs) to establish the shape of asset dynamics to locate the welfare equilibria for the sampled households. We also estimated the household characteristics and covariate environmental factors that influence livestock accumulation over time. We use both non-parametric and semi-parametric techniques to establish the shape of asset accumulation path and determine whether multiple equilibria exist. From the model, we found that a negative shock like a drought leads to an immediate decrease in livestock followed by a smooth reduction in consumption. Because the shock also affects the local economy, it prompts a wage decrease, which reinforces the pastoralist's incentives to tend his own livestock and reduce time spent in the external labor market. Whereas the pastoralist's labor time allocation

shows a pattern of quick convergence, however, the adjustment of other variables such as consumption and capital takes much longer. Food aid helps in smoothening consumption especially among households with few livestock. We established that livestock assets converge to a single stable equilibrium implying that households remained livestock poor in the short term. Such convergence to a stable equilibrium could result from households with more livestock smoothening their consumption during times of food shortage by drawing on their herds for sale or consumption while livestock poor households smoothen their assets by using coping strategies that do not deplete their few livestock holdings. Poor households thus destabilized their consumption to buffer and protect their few assets for future income and survival. We also found that forage availability and herd diversity influenced livestock accumulation over time.

In chapter three we established the extent of malnutrition among children by analyzing the levels of malnutrition among children aged five years and below. Additionally, we estimated the effects of drought, measured by the Normalized Difference Vegetation Index (NDVI), on child health outcomes. When the lack of sufficient rainfall reduces the levels of vegetative greenness, the corresponding lower NDVI values indicate forage scarcity. We followed the approach by Chantarat et al. (2012) and transformed the pure NDVI values to z-scores. We used the average NDVI Z-score values from long dry season (June, July, August, and September) for each survey year, extracted from four regions within Marsabit District. We then proxied the nutritional status of children using the mid-upper arm circumference (MUAC). We adjusted the MUAC for the age and sex of the child by converting the values to a MUAC Z-score based on WHO growth charts, as Z-scores are found to be better indicators of wasting than the fixed cut-off value (WHO 2009). The results show that malnutrition among children is prevalent in the study area, with approximately 20% of the children being malnourished and a one standard deviation increase in NDVI z-score decreases the probability of child malnourishment by 12–16 percent. The livestock insurance seems to be an effective risk management tool, as it slightly

reduces the probability of malnutrition among children. Child health is also impacted by local conditions and family characteristics, which leave older children worse off than younger siblings who are still being breastfed or receive better care. In the most vulnerable households, boys are worse off than girls. At the same time, male-headed households tend to have healthier children, while family size is negatively associated with child MUAC. To reduce the effects of drought on child malnutrition, the targeting of food aid beneficiaries is crucial, and the use of remote sensing data could improve the effectiveness of these interventions.

In chapter four we sought to understand the levels of school enrolment and gender differences in schooling given the challenges of accessibility to schools in the pastoral areas. First, we established levels of school enrolment by gender. Secondly, we estimated the effect of herd migration on school attendance and thirdly we gathered the community perceptions about challenges that school going children face and how they can be addressed. We used both household panel data for children aged between 6 and 15 years and community data obtained from some focus group discussions. Results showed that the effect of herd migration on school attendance is significant and negative: once other factors are controlled for, the predicted probability of child failure to attend school is 26% for households that migrate their livestock. On the other hand, attendance is positively impacted by the educational level of both the household head and his spouse. The analysis of survey data indicates that over the five years studied, school enrollment increased for both boys and girls, averaging 63.6% and 69.0%, respectively, in 2013. During the same period, the school dropout rate was quite low (less than 10%) although still higher among boys than among girls. The mean schooling efficiency (relative grade attained) was 0.67, which implies inefficiency in grade progression. Girls were better off than boys in terms of both grade attainment and staying in school, while children from more educated families showed a higher schooling efficiency than those from less educated families. At the same time, boys are less likely to attend school than girls, probably, the FGD participants confirmed, because boys engage in more economically valued activities like

herding, which raises the opportunity costs of their absence for school. Girls, in contrast, engaged mostly in nonmonetizable household duties. Nevertheless, as key barriers to school attendance, the participants identified too few schools, nomadism and communal conflicts.