

Chapter 18

SIMULATION NOISE AND THE ESTIMATION OF LAND USE DECISIONS IN KENYA

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Abstract This study investigates issues surrounding the nature and importance of simulation noise when using maximum simulated likelihood methods in bivariate tobit estimation of panel data. The application presented considers land use decisions made by nomadic herders in northern Kenya. The study focuses on issues of parameter instability arising from the use of simulation methods to control for an unobserved household specific effect. It is found that parameters are more stable across estimation runs for variables for which there is a higher degree of within household variability and when the parameter is estimated with a higher degree of precision in the initial run. The study also finds that there is less variability in simulating estimation results when different draws are used to simulate results of a given estimation run than when results from different estimation runs generated by using different draws are used for simulation. It is also found that simulation noise does not have a large impact on a main policy finding of the estimation and simulation: reducing risk of accessing remote grazing areas can improve the spatial distribution of grazing pressure and thus address localized degradation and a failure to provide security can lead to environmental degradation.

Keywords: Bivariate Tobit, Maximum Simulated Likelihood, Simulation Noise, Pastoralism, Grazing Land Degradation.