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hugo.storm@ilr.uni-bonn.de**PhD Project****Development of a Bayesian estimator for non-stationary Markov transition probabilities and its application to EU farm structural change**

The agricultural sector has experienced substantial structural changes in the past and faces continuing adjustments in the future. The implications of structural change are not only relevant for the sector itself but have broader social, economic and environmental consequences for a region. An understanding of this process is required in order to assess how (agricultural-) policy affects or, if a specific social outcome is desired, can influence this development. A common approach to gain understanding of the process is to model structural change as a Markov process. One problem in the analysis of structural change in the EU is that farm level (micro) data is rarely available such that inference about behaviour of individual farms has to be derived from aggregated (macro) data. Recently, the generalized cross entropy estimator gained popularity in this context since it allows considering prior information such that the often underdetermined “macro data” Markov models can be estimated. However, the way prior information is considered is also the greatest drawback of the approach. Therefore, the project aims to develop a Bayesian framework as an alternative estimator that allows to consider prior information in a more efficient and transparent way. The project will further provide an evaluation of the statistical properties of the estimator as well as an exemplifying application analyzing the effects of single farm payments on agricultural structural change in the EU.