

On a Threshold Autoregression

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This talk considers the theory and inference of an observation-driven model for time series of counts. It is assumed that the observations follow a Poisson distribution conditioned on an accompanying intensity process, which is equipped with a two-regime threshold structure according to the magnitude of the lagged observations. The model remedies one of the drawbacks of the Poisson integer-valued GARCH model by allowing negative correlation in the observations. Moreover, the asymptotic theory of the maximum likelihood estimates of the parameters is established. A simulation study and a real data application are considered, where the model is applied to the number of major earthquakes in the world.

Key Words: Maximum likelihood estimation, Poisson processes, threshold models, time series of counts