

A study on integer-valued time series models with overdispersion

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Abstract

Time series of counts observed in practice often exhibit overdispersion. The integer-valued generalized autoregressive conditional heteroscedastic (INGARCH) models are commonly used for count time series with overdispersion. We assume the conditional mean of an INGARCH model follows a Poisson distribution or other distributions, such as the negative Binomial distribution or the generalized Poisson distribution. In this study, we investigate the properties, estimation and real applications of these INGARCH models. Three estimation methods: Yule–Walker, conditional least squares and maximum likelihood approach are considered. Both numerical and empirical studies are performed to compare the performance of these INGARCH models.

Keywords: estimation, INGARCH, integer-valued, overdispersion