

Seminário

Grupo de Probabilidades e Estatística

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11:30

Zoom meeting

Models for limited-dependent variables

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Abstract

The problem of estimating censored linear regression models with autocorrelated errors arises in many environmental and social studies. Moreover, often, real life problems require modelling several response variables together.

The present work proposes methods to estimate censored regression models in the context of time series and multivariate data. The methods are based on creating complete-data by filling in the censored observations, which is the most widely used strategy when the data are missing or censored. In the context of univariate time series data, we used a Bayesian approach to estimate censored regression models with AR(p) errors. The approach considers the Gibbs sampler with data augmentation (GDA), in which, at each iteration, both the model parameters and the latent variables are sampled. Then, a suitable variable transformation allows the full likelihood to be obtained. A simulation study indicates that the proposed approach produces estimates with a high accuracy even in scenarios where the proportion of censored observations is large.

Additionally model checking and model selection procedures for censored time series data are proposed and illustrated in a real data of cloud ceiling. In the context of multivariate data, we propose three data augmentation based methods, mainly, the Expectation Maximization (EM), the classical Data Augmentation and the GDA algorithms. Through a simulation study, the asymptotic properties of the estimates were studied, where it was concluded that the estimates produced by DA and GDA are consistent for low and moderate correlation. In addition, a procedure for partial differences of multivariate data was developed, which allowed the computation of the likelihood function and a posteriori distribution for the multivariate regression model with autocorrelated data.

Link para aceder ao Meeting via Zoom:

<https://videoconf-colibri.zoom.us/j/99539996456?pwd=VIQ1Q2xXcHFtRjdidWV2RVI3aXJMZz09>

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