

The Student- t Censored Regression Model

Karla A. Muñoz Gajardo* Reinaldo B. Arellano-Valle†
Graciela González-Farías‡

April, 2009

Abstract

In econometric analysis is usual to consider models where the dependent variable is censored (limited). In particular, we consider here a truncation to the left of zero. A brief review on Tobin's work and some theoretical results for the limited dependent normal regression model are presented. This article takes up a linear model as the one described above, in which the disturbances are independent and have identical Student- t distribution. In the context of maximum likelihood estimation, we provide an expression to the information matrix, under a convenient re-parametrization of the model. A robust extension of the censored model is compared with results about the normal case; this characteristic that the Student- t distribution posses allow us to model heavy-tail observations.

Key words: Tobit model, truncated normal distribution, maximum likelihood estimation, Student- t distribution.

*Departamento de Estadística, Facultad de Matemática, Pontificia Universidad Católica de Chile, Santiago 22, Chile. E-mail: kmunoz@mat.puc.cl

†Departamento de Estadística, Facultad de Matemática, Pontificia Universidad Católica de Chile, Santiago 22, Chile. E-mail: reivalle@mat.puc.cl

‡Research Center in Mathematics Probability and Statistics Jalisco s/n, Mineral de Valenciana 36240 Guanajuato, Gto. México. E-mail: farias@cimat.mx