COLLOQUIUM

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Distribution-Free Test in Tobit Mean Regression Model

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Abstract

The relationship between a predictor X and a response Y is often studied through regression analysis, based on a fully observed data set on these two variables. However, in some cases, Y is censored in the sense that it cannot be observed unless it is above or below some known threshold. This happens in many data sets from economics, epidemiology, and biomedical studies etc. The Tobit regression model is often used to describe the censored data of this type. In this talk, we will discuss the problem of fitting a parametric model in Tobit mean regression models. The proposed test is based on the supremum of the Khamaladze transform of a partial sum process of calibrated residuals. The asymptotic null distribution of this transformed process is shown to be the same as that of a time transformed standard Brownian motion. Consistency of this sequence of tests against some fixed alternatives and asymptotic power under some local nonparametric alternatives are also discussed. Simulation studies are conducted to assess the finite sample performance of the proposed test. The power comparison with some existing tests shows some superiority of the proposed test at the chosen alternatives.

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