

On Rank Methods in Errors-in-Variables Models

Silvelyn Zwanzig*

Uppsala University, Sweden, Uppsala zwanzig@math.uu.se

Rank methods are mostly used for constructing tests. They have the advantages that the null distribution of rank statistics does not depend on the underlying distribution. Rank estimation are not applied in the same range, even though the theoretical properties are well known in case of models with no errors in the variables. In this presentation the multivariate linear functional model is assumed and the properties of rank estimates are studied. A rank estimator is defined as a minimum point of Jaeckels dispersion. Two different types of Jaeckels dispersion are considered, the first one is based on the naive use of vertical residuals while the second is based on orthogonal residuals. These two types of dispersions are compared and their asymptotic approximation is derived. It is shown that rank estimates based on vertical ranks have a bias, while rank estimates based on orthogonal ranks are consistent.

Key Words: Functional relation, Jaeckels dispersion, consistency, orthogonal residuals