

Bickel-Rosenblatt Type Goodness-of-Fit Test in Linear Errors-in-Variables Model

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Abstract

A class of Bickel-Rosenblatt type goodness-of-fit tests is proposed for fitting a parametric family to the regression error density function in linear errors-in-variables models. These tests are based on a class of L2-distances between a kernel density estimator of the residual and an estimator of its expectation under null hypothesis. Asymptotic normality of the null distribution of the proposed test statistics is investigated and the asymptotic power of these tests under certain fixed and local alternatives is also considered, an optimal test within the class is identified. A parametric bootstrap algorithm is proposed to implement the proposed test procedure when the sample size is small or moderate and finally, a finite sample simulation study shows very desirable finite sample behavior of the proposed inference procedures.