

Goodness-of-fit tests for semiparametric transformation models

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Abstract

We consider a semiparametric model whereby the response variable following a transformation can be expressed by means of a nonparametric regression model. In this model the form of the transformation is specified analytically but incorporates an unknown transformation parameter. We develop testing procedures for the null hypothesis that this semiparametric model adequately describes the data at hand. In doing so, the test statistic is formulated on the basis of Fourier-type conditional expectations. The asymptotic distribution of the test statistic is obtained under the null as well as under alternative hypotheses. Since the limit null distribution is nonstandard, a bootstrap version is utilized in order to actually carry-out the test procedure. Monte Carlo results are included that illustrate the finite-sample properties of the new method

Keywords

Transformation model; Goodness-of-fit test; Nonparametric regression; Bootstrap test