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On the single-index model estimate of the conditional density function: consistency and implementation. (English) Zbl 1391.62096

Summary: We consider the estimation for the unknown single-index parameter in the conditional density function. Firstly, estimation method and asymptotic properties for the estimator are obtained. Secondly, to test a hypothesis on the single-index parameter, a test statistic based on the difference between the minimization criteria under the null and alternative hypotheses is proposed. We show that the limiting distribution for the test statistics is a weighted sum of independent standard chi-squared distributions. Besides, a local alternative hypothesis that converges to the null hypothesis at an \( n^{-1/2} \) rate is also considered. A bootstrap procedure is proposed to calculate critical values. Finally, simulation studies are conducted to demonstrate the performance of the proposed procedure and a real example is analyzed as an illustration.

MSC:
62H12 Estimation in multivariate analysis
62G07 Density estimation
62G20 Asymptotic properties of nonparametric inference
62H15 Hypothesis testing in multivariate analysis

Keywords:
single-index; double kernel smoothing; restricted estimator; bootstrap procedure

Full Text: DOI

References:


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