

UNIVERSITY OF SYDNEY

SCHOOL OF MATHEMATICS AND STATISTICS

Statistics Seminar

Friday, 13 May, 2.00pm

Carslaw 173

**Bootstrap tests concerning the error distribution in
nonparametric regression models**

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Abstract

The first part of the talk addresses testing for the hypothesis of a parametric form of the error distribution in nonparametric regression models. The proposed testing procedure is based on an empirical process of nonparametrically estimated residuals and is not asymptotically distribution-free. Therefore a parametric bootstrap is applied to deal with this problem. The performance of the resulting bootstrap test is investigated from an asymptotic point of view and by means of a simulation study.

In the second part of the talk we consider the problem of testing symmetry of the error distribution in a nonparametric regression model. We propose as a test statistic the difference between the two empirical distribution functions of estimated residuals and their counterparts with opposite signs. In this context the performance of a symmetric wild bootstrap procedure is discussed in asymptotic theory and by a simulation study.

We will further discuss briefly a smooth residual bootstrap procedure for testing for a changepoint in the error distribution and a Martingale approach to obtain asymptotically distribution-free test statistics and avoid resampling procedures in the context of testing for equality of error distributions in two regression models.

This paper contains joint works with Holger Dette and Eva Nagel (both Ruhr-Universitt Bochum), Juan Mora (Universidad de Alicante) and Ingrid Van Keilegom (Universit catholique de Louvain-la-neuve).

preprints: <http://www.ruhr-uni-bochum.de/mathematik3/preprint.htm>

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