

**DATA-DRIVEN SCORE TESTS FOR HOMOSCEDASTIC LINEAR
REGRESSION MODEL: ASYMPTOTIC RESULTS**

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Abstract: We describe and investigate new tests for testing the validity of a semi-parametric random-design linear regression model. The tests were introduced in Inglot and Ledwina (2006a, b). We repeat here basic steps of the constructions. The resulting statistics are closely linked to some norms of the appropriate efficient score vector and related quantities. A useful way of deriving the efficient score vector is proposed and discussed. We introduce also a large class of estimators of the efficient score vector and prove that under the null model our constructions are asymptotically distribution free. The proof adopts and exploits some ideas and results developed in the area of semi-parametric estimation. We give also the limiting distribution of the test statistics under the null hypothesis. The simulation results contained in Inglot and Ledwina (2006a, b) show the very good performance of the proposed tests.

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