

# Different linearity tests for a regression model with an imprecise response

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## SUMMARY

Recently a new linear regression model with fuzzy response and scalar explanatory variables has been introduced and deeply analyzed. Since the inferences developed for such a model are meaningful only if the relationship is indeed linear, it is important to check the linearity for the regression model. Two different linearity tests have been introduced. The first one is based on the comparison of the simple linear regression model and the nonparametric regression. In details, the test statistic is constructed based on the variability explained by the two models. The second one consists in using the empirical process of the regressors marked by the residuals. Both tests have been analyzed by means of a bootstrap approach. In particular, a wild bootstrap and a residual bootstrap have been investigated.

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