

BETA REGRESSION MISSPECIFICATION TESTS

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1. ABSTRACT

The beta regression model is tailored for responses that assume values in the standard unit interval, $(0, 1)$. In its more general formulation, it comprises two submodels, one for the mean response and another for the precision parameter. We develop tests of correct specification for such a model. The tests are based on the information matrix equality, which fails to hold when the model is incorrectly specified. We establish the validity of the tests in the class of varying precision beta regressions, provide closed-form expressions for the quantities used in the test statistics, and present simulation evidence on the tests' null and non-null behavior. We show it is possible to achieve very good control of the type I error probability when data resampling is employed and that the tests are able to reliably detect incorrect model specification, especially when the sample size is not small. Two empirical applications are presented and discussed.

KEYWORDS: Beta regression; bootstrap; information matrix test; model misspecification; Monte Carlo simulation