Andrews, Donald W. K.

A conditional Kolmogorov test. (English) Zbl 0928.62019

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This paper introduces a specification test for parametric models for independent observations. The null hypothesis of interest is that the parametric model is correctly specified. The alternative hypothesis is that the parametric model is incorrectly specified. The parametric model we consider is one that specifies the conditional distribution of a vector $Y_i \in R^V$ of response variables given a vector $X_i \in R^K$ of covariates (regressors). The distribution of the covariates is not specified by the parametric model. Many models used in microeconometric and biometric applications are of this type.

The test we consider is a generalization of the Kolmogorov (K) test (sometimes called the Kolmogorov-Smirnov test) of goodness-of-fit. We call the test a conditional Kolmogorov (CK) test, because it is designed for parametric models for the conditional distribution of Y_i given X_i. The CK test has the following attributes: it is (i) consistent against all alternatives to the null hypothesis H_0, (ii) powerful against $1/\sqrt{n}$ local alternatives to H_0, and (iii) not dependent on any smoothing parameters.

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