

PREDICTION-BASED ASYMPTOTIC SPECIFICATION TESTS
IN NONLINEAR SIMULTANEOUS MODELS

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Abstract

Asymptotic tests designed to detect model misspecification that adversely affects prediction in nonlinear simultaneous models are derived. The tests are constructed with the use of auxiliary regressions of the estimated prediction errors on chosen functions of explanatory variables. Significant results in the test for zero parameters in the linear regression model indicate misspecification due to incorrect functional form for or exclusion of relevant exogenous variables from the nonlinear model.

Two approaches to the construction of the tests are presented. The first approach, which utilizes Taylor series expansions of the estimated prediction errors, has been used by other authors. Here it is used in conjunction with the bootstrap predictor, a stochastic predictor that uses random draws from the empirical distribution function of the calculated sampled residuals as proxies in the simulation of the model. A second approach utilizing mixing assumptions on the auxiliary regression disturbances is developed.