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Consequences and detection of invalid exogeneity conditions

Jerzy Niemczyk

Estimators for econometric relationships require observations on at least as many exogenous variables as the model has unknown coefficients. This thesis examines techniques to classify variables as being either exogenous or endogenous, and investigates the consequences of invalid classifications. Various sequential classification procedures are being designed such that they are still feasible when there is an abundance of candidate exogenous instrumental variables. The performance in finite samples of such procedures, also when enhanced by bootstrapping, is found to be rather limited. Hence, failure to detect endogeneity and thus adopting invalid exogeneity conditions may occur frequently, which increases the relevance of studying its consequences. These are assessed by simulation and approximated by obtaining the asymptotic distribution in linear models of inconsistent estimators. This approximation is found to be very accurate if the actually exploited exogeneity is not very weak and it results in the remarkable finding that inconsistent least-squares estimators may often be more attractive than consistent instrumental variables estimators. To what degree all these procedures and theoretical findings can support and improve actual empirical inference is illustrated by analyzing cross-sectional data on the effects of schooling on earnings.

Jerzy Niemczyk (1978) holds an MSc in Mathematics from Wrocław University of Technology (Poland) and an MSc in Statistics and Economics from Free University of Brussels (Belgium). He entered the Ph.D. programme at Tinbergen Institute and University of Amsterdam on 1 November 2004.