



INSTITUT DE STATISTIQUE, BIostatistique ET SCIENCES
ACTUARIELLES

C O R E

UNIVERSITE CATHOLIQUE DE LOUVAIN

Joint Econometrics and Statistics Seminar ISBA / CORE (in the frame of ARC Time Series)

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Exogeneity tests, weak identification and IV estimation: Is the cure worse than the illness?

Abstract

We study the effects of weak identification on Durbin-Wu-Hausman (DWH) specification tests and Revankar-Hartley exogeneity test. We propose a finite- and large-sample analysis of the distribution of DWH tests under the null hypothesis (level) and the alternative hypothesis (power), including when identification is deficient or weak (weak instruments). Our finite-sample analysis provides several new insights and extensions of earlier procedures. The characterization of the finite-sample distribution of the test-statistics allows the construction of exact identification-robust exogeneity tests even with non-Gaussian errors (Monte Carlo tests) and shows that such tests are typically robust to weak instruments (level is controlled).

Furthermore, we provide a characterization of the power of the tests, which clearly exhibits factors which determine power. We show that DWH-tests have no power when all instruments are weak [similar to Guggenberger (2008)]. However, power does exist as soon as we have one strong instrument. The conclusions of Guggenberger (2008) focus on the case where all instruments are weak (a case of little practical interest). Our asymptotic distributional theory under weaker assumptions confirms the finite-sample theory.

We present simulation evidence indicating: (1) over a wide range of cases, including weak IV and moderate endogeneity, OLS performs better than 2SLS; (2) pretest-estimators based on exogeneity have an excellent overall performance compared with usual IV estimator.

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Monday, April 23, 2012 - 14:30 - at Core b-135