



香港中文大學統計學系

Department of Statistics

THE CHINESE UNIVERSITY OF HONG KONG

DISTINGUISHED LECTURE

The Robust F-Statistic as a Test for Weak Instruments



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Time: 2:30 pm — 3:30 pm

Venue: LHC 104, Y C Liang Hall,
The Chinese University of Hong Kong

Abstract

Montiel Olea and Pflueger (2013) proposed the effective F-statistic as a test for weak instruments in terms of the Nagar bias of the two-stage least squares (2SLS) estimator relative to a benchmark worst-case bias. We show that their methodology applies to a class of linear generalized method of moments (GMM) estimators with an associated class of generalized effective F-statistics. The standard nonhomoskedasticity robust F-statistic is a member of this class. The associated GMMf estimator, with the extension “f” for first-stage, is a novel and unusual estimator as the weight matrix is based on the first-stage residuals. As the robust F-statistic can also be used as a test for underidentification, expressions for the calculation of the weak-instruments critical values in terms of the Nagar bias of the GMMf estimator relative to the benchmark simplify and no simulation methods or Patnaik (1949) distributional approximations are needed. In the grouped-data IV designs of Andrews (2018), where the robust F-statistic is large but the effective F-statistic is small, the GMMf estimator is shown to behave much better in terms of bias than the 2SLS estimator, as expected by the weak-instruments test results.

★★★★★ All are welcome ★★★★★

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