

## Finite Sample Inferences for Weak Instrument Models

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**Abstract :** It is well established that Instrumental Variable (IV) estimators in the presence of weak instruments can be poorly behaved, in particular, be quite biased in finite samples. Finite sample approximations to the distributions of these estimators are obtained using Edgeworth and Saddlepoint expansions. Departures from normality of the distributions of these estimators are analyzed using higher order analytical corrections in these expansions. In a Monte-Carlo experiment, the performance of these expansions is compared to the first order approximation and other methods commonly used in finite samples such as the bootstrap.

**Keywords :** bootstrap, Instrumental Variable, Edgeworth expansions, Saddlepoint expansions

**Conference Title :** ICCESE 2016 : International Conference on Computational Economics, Statistics and Econometrics

**Conference Location :** London, United Kingdom

**Conference Dates :** July 28-29, 2016