The Wald Test and Taylor's Expansion: An Application To Testing Non-linear Functions Of Parameters

Zeng-Hua Lu
Maxwell L. King

Abstract: This paper is concerned with the Wald test. We propose a new test for testing a non-linear functional hypothesis, that takes into account second order terms of the Taylor's expansion of the non-linear restrictions. For testing the square of a single parameter being a constant, the simulation results for our test suggest superiority against the conventional Wald test and the null Wald test. Our finding is also helpful in explaining the problem of the Wald test being non-invariant to reparameterisation of the null restriction and to changes of measurement units of model variables.

Keywords: Non-invariance of the Wald test, the null Wald test, Monte Carlo simulation.

Correspondence:
Department of Econometrics and Business Statistics
Monash University, Clayton
Victoria 3168 Australia
Zen.Lu@buseco.monash.edu.au