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ECOLE POLYTECHNIQUE DE TUNISIE

SEMINAIRE D'ECONOMIE

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Bootstrap Methods for Single Structural Change Tests Power versus Corrected Size and Empirical Illustration

Abstract

This paper assesses the performance of tests for a single structural change at unknown date when regressors are stationary, trending and when they have a break in mean. Size and power of the test procedures are compared in a simulation setup particularly aimed at autoregressive models using their limiting distribution and some bootstrap approximations. The comparisons are performed using graphical methods, namely P value discrepancy plots and size-power curves. The simulation study gives some interesting insights to the test procedures. Indeed, it documents that tests based on the conventional asymptotic distribution are oversized in small samples. The size correction is achieved by some bootstrap methods which appear to possess reasonable size properties. For the power study, the proposed bootstrap method improves on the asymptotic approximations of some tests for heteroskedastic regression errors especially when there is a mean-shift in the regressors. This result has not been found for the case of i.i.d. errors where the bootstrap tests have the same power properties as the tests based on the asymptotic approximations. We finally study the relationship between two monthly U.S. interest rates. The results show that such relationship has been altered by a regime-shift located in May 1981.

Key words: Break date, Bootstrap techniques, and Graphical methods.

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