BAYESIAN ANALYSIS OF STRUCTURAL CHANGE IN A DISTRIBUTED LAG MODEL (KOYCK SCHEME)

ARVIN PAUL B. SUMOBA

Mathematics Department, Mindanao State University
Marawi City, 9700, Philippines

e-mail: absumobay@gmail.com

AND

ARNULFO P. SUPE

Department of Mathematics and Statistics
Mindanao State University-Iligan Institute of Technology
Iligan City, 9200, Philippines

e-mail: arnulfo.supe@yahoo.com

Abstract

Structural change for the Koyck Distributed Lag Model is analyzed through the Bayesian approach. The posterior distribution of the break point is derived with the use of the normal-gamma prior density and the break point, \( \nu \), is estimated by the value that attains the Highest Posterior Probability (HPP). Simulation study is done using R.

Given the parameter values \( \phi = 0.2 \) and \( \lambda = 0.3 \), the full detection of the structural change when \( \sigma^2 = 1 \) is generally attained at \( \nu + 1 \). The after one lag detection is due to the nature of the model which includes lagged variable. The interval estimate \( \text{HPP near } \nu \) consistently and efficiently captures the break point \( \nu \) in the interval \( \text{HPP}, \pm 5\% \) of the sample size. On the other hand, the detection of the structural change when \( \sigma^2 = 2 \) does not show any improvement of the point estimate of the break point \( \nu \).

Keywords: distributed lag model, posterior distribution, break point.

References


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