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

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### 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 *HPP* near  $\nu$  consistently and efficiently captures the break point  $\nu$  in the interval  $HPP_t \pm 5\%$  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.

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