

Accepted Manuscript

On Bayesian Analysis and Unit Root Testing for Autoregressive Models in the Presence of Multiple Structural Breaks

Loukia Meligkotsidou, Elias Tzavalis, Ioannis Vrontos

PII: S2452-3062(17)30036-9
DOI: [10.1016/j.ecosta.2017.04.004](https://doi.org/10.1016/j.ecosta.2017.04.004)
Reference: ECOSTA 60



To appear in: *Econometrics and Statistics*

Received date: 29 January 2016
Revised date: 13 April 2017
Accepted date: 14 April 2017

Please cite this article as: Loukia Meligkotsidou, Elias Tzavalis, Ioannis Vrontos, On Bayesian Analysis and Unit Root Testing for Autoregressive Models in the Presence of Multiple Structural Breaks, *Econometrics and Statistics* (2017), doi: [10.1016/j.ecosta.2017.04.004](https://doi.org/10.1016/j.ecosta.2017.04.004)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

On Bayesian Analysis and Unit Root Testing for Autoregressive Models in the Presence of Multiple Structural Breaks

Loukia Meligkotsidou^a, Elias Tzavalis^b and Ioannis Vrontos^{c*}

^a*Department of Mathematics, National and Kapodistrian University of Athens*

^b*Department of Economics, Athens University of Economics and Business*

^c*Department of Statistics, Athens University of Economics and Business*

vrontos@aueb.gr

May 2, 2017

Abstract

A Bayesian approach is suggested for inferring stationary autoregressive models allowing for possible structural changes (known as breaks) in both the mean and the error variance of economic series occurring at unknown times. Efficient Bayesian inference for the unknown number and positions of the structural breaks is performed by using filtering recursions similar to those of the forward-backward algorithm. A Bayesian approach to unit root testing is also proposed, based on the comparison of stationary autoregressive models with multiple breaks to their counterpart unit root models. In the Bayesian setting, the unknown initial conditions are treated as random variables, which is particularly appropriate in unit root testing. Simulation experiments are conducted with the aim to assess the performance of the suggested inferential procedure, as well as to investigate if the Bayesian model comparison approach can distinguish unit root models from stationary autoregressive models with multiple structural breaks in the parameters. The proposed method is applied to key economic series with the aim to investigate whether they are subject to shifts in the mean and/or the error variance. The latter has recently received an economic policy interest as improved monetary policies have also as a target to reduce the volatility of economic series.

JEL Classification: C11, C22, G10

Keywords: Autoregressive models, Bayesian inference, Forward-backward algorithm, Model comparison, Non-linear representation, Structural breaks, Unit root testing.

Download English Version:

<https://daneshyari.com/en/article/8919499>

Download Persian Version:

<https://daneshyari.com/article/8919499>

[Daneshyari.com](https://daneshyari.com)