XV Serbian mathematical congress, Belgrade, Serbia

Contribution of Bivariate INAR Models in Modeling Time Series of Counts

Predrag M. Popović

Faculty of Civil Engineering and Architecture, University of Niš, Aleksandra Medvedeva 14, Niš, Serbia
e-mail: popovicpredrag@yahoo.com

Miroslav M. Ristić

Faculty of Sciences and Mathematics, University of Niš, Višegradska 33, Niš, Serbia
e-mail: miristic72@gmail.com

Aleksandar S. Nastić

Faculty of Sciences and Mathematics, University of Niš, Višegradska 33, Niš, Serbia
e-mail: anastic78@gmail.com

Abstract. Time series of counts cover broad area of data studied by researchers from various fields of sciences. After initial development of the univariate integer-valued autoregressive models recent decade produced significant number of results in modeling bivariate time series of counts. As well as the univariate models, the bivariate models are composed of the survival and the innovation component. The dependency between the two observed processes has been achieved through the survival, the innovation or some external process, and we will discuss all three approaches. The main properties of the models are presented. Special attention is given to the challenges that arise when the models complexity is increased. The practical aspects of these models will be considered though some real-life data sets.

Keywords: Times series; BINAR model; Thinning operator;