



Bayesian Graphical Models for Structural Vector Autoregressive Processes

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Abstract

Vector autoregressive models have widely been applied in macroeconomics and macroeconometrics to estimate economic relationships and to empirically assess theoretical hypothesis. To achieve the latter, we propose a Bayesian inference approach to analyze the dynamic interactions among macroeconomics variables in a graphical vector autoregressive model. The method decomposes the structural model into multivariate autoregressive and contemporaneous networks that can be represented in the form of a directed acyclic graph. We then simulated the networks with an independent sampling scheme based on a single-move Markov Chain Monte Carlo (MCMC) approach. We evaluated the efficiency of our inference procedure with a synthetic data and an empirical assessment of the business cycles hypothesis.

Keywords: Bayesian Graphical models, Markov Chain Monte Carlo, Structural Vector Autoregression, Directed Acyclic Graph, Bayesian Inference, Dynamic Bayesian Network.

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