Bayesian Modelling of Time-varying Variances: a survey with applications to the Brazilian Market

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Abstract

This paper presents an introduction to the recent literature on volatility models - deterministic and stochastic. Univariate and bivariate stochastic volatility models will be considered. In this class we jointly model stock return volatility and trading volume. The Bayesian implementation of these models will be made using the WinBugs and the Ox softwares. A bivariate Markov switching stochastic volatility model is also presented.

Some Brazilian financial time series are analyzed using univariate volatility models, including the BOVESPA daily index and the exchange rate of real against the US dollar. The bivariate models of returns and trading volume is applied to the TNLP4 (Telemar Norte Leste phone company) a liquid Brazilian stock.
Keywords: Heteroskedasticity, Stochastic Volatility, GARCH Models, Gibbs sampling, Non linear time series.

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