Bayesian Markov Switching Stochastic Correlation Models

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2 June 2013

Abstract

This paper builds on Asai and McAleer (2009) and develops a new multivariate Dynamic Conditional Correlation (DCC) model where the parameters of the correlation dynamics and those of the log-volatility process are driven by two latent Markov chains. We outline a suitable Bayesian inference procedure, based on sequential MCMC estimation algorithms, and discuss some preliminary results on simulated data. We then apply the model to three major cross rates against the US Dollar (Euro, Yen, Pound), using high-frequency data since the beginning of the European Monetary Union. Estimated volatility paths reveal significant increases since mid-2007, documenting the destabilizing effects of the US sub-prime crisis and of the European sovereign debt crisis. Moreover, we find strong evidence supporting the existence of a time-varying correlation structure. Correlation paths display frequent shifts along the whole sample, both in low and in high volatility phases, pointing out the existence of contagion effects closely in line with the mechanisms outlined in the recent contagion literature (Forbes and Rigobon (2002) and Corsetti at al. (2005)).

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