Dynamic Correlation Multivariate Stochastic Volatility with Latent Factor Structures

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Abstract

Modeling the correlation structure of asset returns is an essential issue in financial studies. Considerable evidence from empirical studies has shown that correlations among asset returns are not stable over time. To describe the evolution of the dynamic correlation matrix of asset returns, a recent development in the multivariate stochastic volatility (MSV) area has focused on the use of inverse Wishart processes. Within the framework of such MSV models, this paper proposes a latent factor model based on Markov chain Monte Carlo estimation methods. We apply the cumulative log predictive Bayes factor as the criterion for the choice of the number of factors. The proposed model is demonstrated by simulation study and compared to other competing models using Fama-French portfolio-weighted return data. The results show that our model not only captures stylized facts in the past but also performs well in future trend prediction.

Keywords: Correlation breakdown; Cumulative log predictive Bayes factor; Markov chain Monte Carlo; Multivariate stochastic volatility; Wishart processes.

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