



MGARCH models: Tradeoff between feasibility and dynamic dependencies in volatilities and covariances

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Abstract

The multivariate GARCH (MGARCH) models are popular to represent conditional second-order moments of conditionally heteroscedastic multivariate time series. The original MGARCH models were strongly restricted to reduce the number of parameters to make their estimation feasible in systems with a large number of series and to guarantee positive definiteness of the conditional covariance matrices. However, these restrictions limit the dynamics that MGARCH models can represent, assuming for example, that the volatilities evolve in a univariate fashion in such a way that they are not related either among them nor with the correlations. This paper focuses on the limitations implied by the restrictions usually imposed in practice in symmetric MGARCH models. The models are illustrated using simulated and empirical data.

Keywords: multivariate GARCH models; multivariate volatility models; restrictions in MGARCH models