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Modelling the Common Risk among Equities: A Multivariate Time Series Model with an Additive GARCH Structure

The DCC GARCH models (Engle and Sheppard, 2001) have been well studied to describe the conditional covariance and correlation matrixes while the common risk among series cannot be captured intuitively by the existing multivariate GARCH models. A new class of multivariate time series model with an additive GARCH structure is proposed. The dynamic conditional covariances between series are aggregated by a common risk term which has been the key to characterize the conditional correlation. The model we proposed here can be implemented to apply to institutional portfolio management to determine the weights on equities and fixed income securities.