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Estimation and Forecasting with a Quantile AR Model for Financial Returns

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Abstract : This talk presents a Bayesian approach to quantile autoregressive (QAR) time series model estimation and forecasting. We establish that the joint posterior distribution of the model parameters and future values is well defined. The associated MCMC algorithm for parameter estimation and forecasting converges to the posterior distribution quickly. We also present a combining forecasts technique to produce more accurate out-of-sample forecasts by using a weighted sequence of fitted QAR models. A moving window method to check the quality of the estimated conditional quantiles is developed. We verify our methodology using simulation studies and then apply it to currency exchange rate data. An application of the method to the USD to GBP daily currency exchange rates will also be discussed. The results obtained show that an unequally weighted combining method performs better than other forecasting methodology.

Keywords : combining forecasts, MCMC, quantile modelling, quantile forecasting, predictive density functions
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