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跳跃的估计、股市波动率的预测以及预测精度评价

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Jump Estimation, Stock Market Volatility Forecasting and Prediction Accuracy Evaluation

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摘要 本文基于C_TMPV理论估计已实现波动率的跳跃成分,在此基础上构建考虑跳跃的AHAR-RV-CJ模型和MIDAS-RV-CJ模型来预测中国股市的已实现波动率,并评价和比较各类波动率模型的预测精度。实证结果表明:基于C_TMPV估计的波动率跳跃成分对日、周以及月波动率的预测有显著的正向影响;AHAR-RV-CJ模型和MIDAS-RV-CJ模型的样本内和样本外预测精度在不同的预测时域上都是最高的,尤其是对数形式的模型;MIDAS族模型的样本外预测精度在中长期预测时域上比HAR族模型高;AHAR-RV-CJ模型和MIDAS-RV-CJ模型的样本外预测能力在中长期预测时域上比基于低频数据的Jump-GARCH模型、SV-CJ模型和SV-IJ模型好。

关键词： 波动率预测　 已实现波动率　 C_TMPV　 MIDAS 模型　 SPA检验

Abstract： Based on the theory of corrected realized threshold multipower variation(C_TMPV), the jump components of the realized volatility are estimated, and two newly developed realized volatility model allowing for jump, the AHAR-RV-CJ model and MIDAS-RV-CJ model, are proposed to predict realized volatility of Chinese Stock Markets. The forecast accuracies of several volatility models are also evaluated and compared. Our findings demonstrate that the jump components of the realized volatility estimated by C_TMPV have positive and significant impacts on daily, weekly and monthly volatility prediction, and the AHAR-RV-CJ model and MIDAS-RV-CJ models with the continuous and jump components of the volatility are the best models for future volatility prediction in different prediction horizons. These results hold up for both the in-sample and out-of-sample forecasts, especially the logarithmic models. It is also found that the out-of-sample forecasting performance of MIDAS model is better than HAR model with the same regressor and the out-of-sample predictive power of AHAR-RV-CJ and MIDAS-RV-CJ models is better than Jump-GARCH, SV-CJ and SV-IJ models in the medium and long prediction horizons.

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