Model Selection for Energy Commodities

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Abstract

In this paper we perform a model selection procedure from a Value at Risk forecasting point of view for the major energy commodities traded in the markets. We consider several model specifications including GARCH, Generalized Autoregressive Score (GAS) and Conditional Autoregressive Value at Risk (CAViaR) ones. We also propose a Dynamic Quantile Regression (DQR) framework where the parameters evolve over time following a first order stochastic process. The VaR forecasting performances are assessed by using the Model Confidence Set procedure which provides a superior set of models by testing the null hypothesis of Equal Predictive Ability. Subsequently the estimates yielded by each model are pooled together with a weighted average approach. Our results show that the quantile models i.e. the CAViaR and the DQR outperform all the others for all the commodities. Moreover, the VaR aggregation generally produces better results, especially for high level of confidence.

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