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1-step-ahead forecast evaluation of conditional volatility models applied to Brent Oil log returns

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Abstract

The optimal scenario for perhaps every actor in the financial world would be to be able to control risk. Knowing what scenarios and events that would take place in the future would probably due aswell. The best an analyst in the financial market could do is to model and forecast the risk. This translates to model and forecast volatility. One particular asset in the financial market that is regarded to have a great economical impact and has fluctuated a lot during the last ten years is the oil price. In this paper the GARCH(1,1) and IGARCH(1,1) models' ability to forecast the volatility of the Brent Oil one day ahead is evaluated. The forecasting performance is first evaluated with regards to unconditional coverage. It is concluded that the GARCH(1,1) model using a Student-t distribution is the only model that on average forecasts adequately. It is then evaluated whether this model's symmetric prediction interval is satisfactory, in particular for the extreme observations. Finally, the entire distribution for the 1-step-ahead forecast is examined. The result is that the GARCH(1,1) model using a Student-t distribution performs well in every aspect considered when producing 1-step-ahead forecasts.

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