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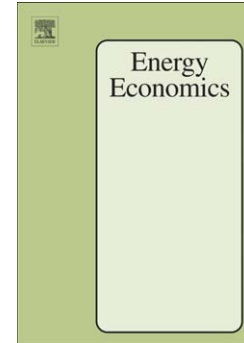
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Forecasting Crude Oil Price Volatility and Value-at-Risk:
Evidence from Historical and Recent Data[1]

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Abstract: This paper adopts the Markov-switching multifractal (MSM) model and a battery of generalized autoregressive conditional heteroscedasticity (GARCH)-type models to model and forecast oil price volatility. Extending previous work by Wei et al. (2010) and Wang et al. (2016), we evaluate the forecasting performance of all these models via a superior predictive ability (SPA) test. We go beyond previous research by (i) considering oil price volatility in the nineteenth century along with recent data, (ii) applying different types of MSM models and (iii) considering value-at-risk predictions besides our forecasting of volatility. Confirming its successful performance in other studies, the new MSM model comes out as the model that most often across forecasting horizons and subsamples cannot be outperformed by other models. This superiority also applies to forecasting of value-at-risk.

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