

Forecasting spot prices in the UK natural gas market

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Overview

Natural gas is one of the main energy resources used in the UK, which is mainly utilised for domestic heating and power generation. The pricing of natural gas prices is crucial for generators, power and gas suppliers, manufacturing plants, real estate agency and other downstream users since the movements of gas prices affect their revenue or costs. This paper employs different popular forecasting models to analyse and forecast UK gas spot prices and evaluates the performance by both prediction errors and success ratio.

Methods

This paper chooses different categories variables to predict UK gas spot prices, which includes financial indices, interest rates, metal, agriculture and other energy commodities. In addition, we employ different price forecasting techniques to improve forecasting performance such as forecast combination, penalised regression, stepwise regression and principal components regression to predict the spot prices of UK natural gas. The forecasting performance is evaluated by both the mean squared prediction error (MSPE) and the success ratio.

Results

The Brent oil prices and S&P 500 are two predictors that can produce better forecasts, which reconfirm the linkage between oil, gas and global stock markets. In addition, among all predictive techniques, forecast combination (trimmed discounted triangular weights) seems to perform the best even though the success ratio is only just above 50%. The low directional accuracy may be attributed to the unpredictable weather change that usually sharply increases the spot gas price due to the heavy reduction in the gas storage.

Conclusions

This paper considers different predictors for UK natural gas and finds Brent oil and S&P 500 index are two most important variables. In addition, forecast combination (trimmed discounted triangular weights) can help improve the forecasting performance and reach above 50% directional accuracy.