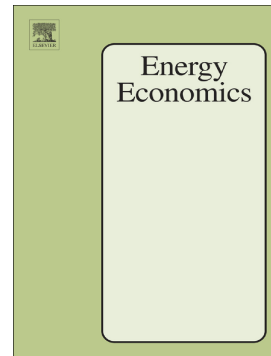


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Coal overcapacity in China: Multiscale analysis and prediction

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Abstract

Gaining a quantitative understanding of the causes of coal overcapacity and accurately predicting it are important for both government agencies and coal enterprises. Following the decomposition-reconstruction-prediction concept, a combined Ensemble Empirical Mode Decomposition-Least Square Support Vector Machine-Autoregressive Integrated Moving Average (EEMD-LSSVM-ARIMA) model is proposed for quantitatively analyzing and forecasting coal overcapacity in China. The results show that the main causes of coal overcapacity in China include insufficient demand, market failure, and institutional distortion. Institutional distortion, with an influence degree of 73.75%, is the most fundamental and influential factor. From 2017 to 2019, the scale of coal overcapacity in China will reach between 1.721 and 1.819 billion tons, suggesting that coal overcapacity will remain a serious problem. The rate of coal overcapacity caused by insufficient demand will fluctuate slightly, while coal overcapacity caused by market failure will trend downward, but the impact of institutional distortion on coal overcapacity will be exacerbated. A statistical analysis demonstrates that the EEMD-LSSVM-ARIMA model significantly outperformed other widely developed baselines (e.g. ARIMA, LSSVM, EEMD-ARIMA, and EEMD-LSSVM).

Keywords: coal industry; overcapacity; multiscale analysis; forecasting; integrated model

Jel classification: C53; Q41; Q48; L72

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