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An approach for Baltic Dry Index analysis based on empirical mode decomposition

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Abstract

The bulk shipping market is seasonal, cyclical and highly volatile. Due to the nonstationary and nonlinear nature of price series and the complexity of influencing factors, it is difficult to analyse the fluctuations in the bulk shipping market. In this study, a method based on empirical mode decomposition (EMD) is proposed to investigate the volatility of the Baltic Dry Index (BDI). In this method, the original freight price series is decomposed into several independent intrinsic modes, using EMD first. Then, the intrinsic modes are composed into three components: short-term fluctuations caused by normal market activities, the effect of extreme events and a long-term trend. Numerical experiments indicate that the proposed method can effectively reveal the characteristics of bulk freight price series with different economic meanings and decrease error accumulation. Meanwhile, by decomposition of intrinsic

modes, the complexity of the model formulation can be controlled and the operability of the model can be improved.

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