

Container freight forecasting with and without model re-estimation in expanding horizon

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Abstract

Short-term forecast of container freight is essential for major maritime players including ship owners, shipping lines, shippers and even for the port authorities. This study compares three univariate models — ARIMA, Neural Network Autoregression (NNAR) and TBATS, and finds that TBATS or combination of TBATS and ARIMA forecast, outperforms ARIMA and NNAR both in training and test-sample forecast. To the best of author's knowledge, an application of TBATS is not evident in forecasting container freight.

Moreover, this study adopted the model re-estimation technique for the next-step expanding forecast for test-sample in addition to the conventional approach to forecast test-sample using a selected model based on the training-sample. As a proxy for weekly container freight, China Container Freight Index (CCFI) is forecasted, collected from the Shanghai Shipping Exchange from January 2010 to December 2018, in total 470 data points. For cross-validation, two expanding training-samples, one from January 2010 till December 2016 and another from January 2010 till December 2017 are analysed. Subsequently, two test-samples, January-December 2017 and January-December 2018 are forecasted.