

Abstract

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Short-term forecast of container throughput: An ARIMA-intervention model for the port of Antwerp

Short-term forecasts of container throughput are essential for planning both port operations and hinterland activities. However, the volatility and uncertainty in global economic activity and, consequently, in seaborne trade introduce complexity in modelling and forecasting container throughput at the port level. In this article, different univariate time series approaches were applied the autoregressive integrated moving average (ARIMA) model, namely the ARIMA-intervention model, and the ARIMAX model with leading economic indicator. The advantage of the methodology applied is two-fold (i) it provides insight about the data generating process post-2008 financial crisis and (ii) it identifies the relationship between economic activity and container throughput. Monthly data for the total container throughput at the port of Antwerp was used for the period January 1995–March 2015. On the basis of the empirical analysis and the assessment of the forecasting performance, the EU industrial confidence indicator turned out to lead the container throughput for 2 months. In addition, the incorporation of the structural break of October 2008 showed that, given the conditions, container throughput was persistent to return to the pre-crisis level.