Forecasting Exchange Rates using Time Series and Neural Network Approaches

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ABSTRACT
Exchange rates play an important role in controlling dynamics of the foreign exchange market. Predicting exchange rates has become one of the most challenging applications of financial time series forecasting due to its unpredictability and volatility. This research study is to develop and compare the accuracy of two models; Generalized Auto-Regressive Conditional Heteroskedasticity (GARCH) as the time series model and Feedforward neural network with the Backpropagation algorithm as the Artificial Neural Network (ANN) model for predicting daily currency exchange rate of US Dollar against Sri Lankan Rupee (USD/LKR). For both models, past lagged observations of the data series and moving average technical indicators were employed as the explanatory variables and the predictive performance were evaluated using a number of widely used statistical metric. According to the performance of two models, it can be concluded that the ANN based model performs better when compared with the GARCH model to predict the exchange rate of USD/LKR.

Keywords: Forecasting, Exchange rate, GARCH model, Artificial Neural Network.