

FORECASTING FOREIGN EXCHANGE RATE BY USING THE ARIMA MODEL: A CASE STUDY OF USD/LKR EXCHANGE RATE

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This study endeavors to identify the most efficient ARIMA model for predicting the monthly exchange rate between the US Dollar and the Sri Lankan Rupee. Data was collected from the Sri Lankan FOREX market website from January 2014 to December 2023 to test the time series method's applicability in forecasting foreign currency exchange rates. To establish the ARIMA foreign currency exchange rate model, the first difference was calculated using the ADF test to make the data stationary. Residual diagnosis - correlogram Q statistics further confirmed this model. According to the correlogram Q statistics results, the selected model had no ACF and PACF with results above the 0.05 significant level. To validate the predicted foreign currency exchange rate, it was compared with the actual foreign currency exchange rate from January 2023 to December 2023 of the respective foreign currency and evaluated using the Goodness of Fit test's Chi-Square test, mean absolute percent error (MAPE), mean square error (MSE), and root mean square error (RMSE) values. As a result, the above ARIMA model can effectively forecast the foreign currency exchange rate in USD/LKR. Financial crises in the country could affect the study's results and may only be partially accurate. Nevertheless, the study's findings can provide valuable guidance for researchers, practitioners, economic decision units, and investors in the FOREX market. The accuracy of the results can be further improved by incorporating weekly and daily data.

Keywords: Foreign Exchange Rate, ARIMA Model, USD, Exchange rate Forecasting, Time series model and ADF