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### **Forecasting foreign exchange reserves in Sri Lanka**

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Foreign exchange reserves are mainly used by governments to stabilize the exchange rate and balance international payments. They play a major role in the current financial crisis in Sri Lanka too. The purpose of this study was to build a suitable forecasting model and to detect factors affecting foreign exchange reserves in the context of Sri Lanka. The findings of this study can be used to provide suggestions for some policy measures taken by the government for the overall improvement of foreign exchange reserves. Monthly data on the foreign exchange reserves, United States Dollar (USD) exchange rate, foreign direct investments (FDI), gold reserves, imports, inflation rate, remittance, and total exports from January 2010 to September 2021 were used for the model fitting procedure. To transform quarterly data on gold reserves into monthly data, the cubic spline interpolation approach was utilized. The preliminary analysis identified a significant association between the foreign reserves and predictor variables: exchange rate, FDI, gold reserves, imports, and remittance. Augmented Dicky Fuller (ADF), Kwiatkowski Phillips Schmidt Shin (KPSS), and Phillips-Perron (PP) unit root tests were used to examine the stationarity. A time series regression model was fitted, adhering to the assumptions of residual diagnostics: multicollinearity, homoscedasticity, serial correlation, and autocorrelation, except for the normality. Further, the presence of co-integration was tested with the Johansen cointegration test revealed long-run equilibrium. Hence a vector error correction (VEC) model was fitted which adhered to assumptions of model residuals, including serial correlation, heteroscedasticity, and except for normality. The forecasted VEC model has a Mean Absolute Percentage Error (MAPE) of 5.30%, indicating that the VEC model is better for forecasting compared to the fitted time series regression model with a MAPE of 9.52%. The results of the analysis further revealed that foreign exchange reserves have a positive significant impact on the remittance to Sri Lanka and foreign reserves of seven months ago.

**Keywords:** Cubic spline interpolation, Forecasting, Foreign exchange reserves, Remittance, Time series regression