

## Comparison of time series and vector autoregressive models: forecasting exchange rates in Sri Lanka

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The Foreign exchange market is one of the leading markets in the world with the value of transactions happening around the world exceeding trillion Dollars a day. The demand and supply of the currencies concerned determine the rate at which the currencies are exchanged between the two parties. As the world moves towards the concept of a 'global village' the need for exchange of currencies has become important more than ever before. Therefore the ability to forecast the exchange rate has become so important.

The focus of this paper is to come up with a time series model and econometric model to forecast the exchange rate of the United States Dollar (\$) with respect to the Sri Lankan Rupee and to identify the most appropriate model from these two models for forecasting future exchange rates. Only the past exchange rates were used to forecast the future exchange rates in the time series model, where a set of relevant macro economic variables with past exchange rates were considered in the econometric model. Granger Causality test is used to identify the most influencing variables that are to be included into the model. It was found that, from the considered set of variables interest rate, budget deficit and number of tourists from the US that visited Sri Lanka should be included in the econometric model.

By applying the Time series methodology SARIMA (0,1,1) (1,1,0) 12 model was fitted to forecast exchange rates. Results of Unit root test and Philip Peron tests were used to identify the structure of the Vector Autoregressive (VAR) model and then the model was fitted to estimate the parameters. For models estimated from two methodologies, comparisons were made using forecasted values as well as the root mean square error statistic. The results suggest that VAR model performs better in forecasting future exchange rates of United States Dollar compared to the conventional Time series model.

**Key words:** Exchange rate, Time series, Granger causality test, Vector autoregressive, Unit root

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