
Modeling exchange rate volatility and detection of its attributes

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The objectives of this study are to find the best model and to detect the attributes of the exchange rate volatility on Sri Lankan rupee (LKR) against the US dollar (USD). The daily exchange rate span from 1st of January 2009 to 1st of January 2020 was collected from the Central Bank of Sri Lanka. The residuals of the conditional mean model of return series were first examined for heteroscedasticity. Then the conditional variance of residuals was modeled as Generalized Autoregressive Conditional Heteroscedastic (GARCH) to capture the volatility clustering and persistence. The asymmetry in volatility was tested with the sign and size biased test and it was modeled as Exponential GARCH (EGARCH) to examine the leverage effect. Finally, both symmetric and asymmetric models were compared to find the best. It is revealed that, the daily returns of exchange rate were highly leptokurtic. Moreover, the GARCH (1,1) model shows the volatility clustering and an explosive process evident in conditional variance of residuals. The asymmetric behavior of volatility to shocks depends on the size of the previous shocks but not the sign. Among two models, the EGARCH (1,1) was the best to capture such dynamics in volatility. This was evident from empirical results for Arab currencies. Recently, the exchange rate volatility increased significantly and made international trade more unstable. This urges careful attention about the attributes that drive exchange rate volatility and the knowledge provided by this study empowers to take precautionary measure to strengthen the international trade for future.

Key words: *Exchange rate, Volatility, Heteroscedasticity, Conditional variance*

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