

Russian Rubble Exchange Rate: A Univariate Time Series Analysis

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Abstract

The analysis and modeling of exchange rate is very important for business, particularly under the current globalized environment. The exchange rate risk can impacts sales, costs, interest rates, and profitability of a firm. There is a wide range of quantitative forecasting techniques available for modeling foreign exchange rate risk which include univariate time series techniques, multivariate time series models, and market based forecasting models built on spot and forward exchange rates. At one time, univariate time series models were rejected in favour of large-scale multi-equation models on the grounds that the former did not have any backing of economic theory. However, it has been repeatedly found that a single-equation univariate model can outperform an expensive multi-equation structural econometric model. This finding has shifted interest back to univariate models as a forecasting and modeling device. The present paper uses univariate time series models like autoregressive (AR), moving average (MA), and autoregressive moving average (ARMA) to analyze the exchange rate of Russian currency rubble with respect to U.S. dollar, and measures conditional volatility using generalized autoregressive conditional heteroscedasticity GARCH (1,1) model. Test of monthly seasonality is also conducted using weekly time series data for the past 10 years from 2006 to 2016. Results confirm that Russian rubble follows a random walk having seasonality in the months of February and March, with some traces of fortnight seasonality.

Key Words: Exchange Rate, Seasonality, Volatility, GARCH (1, 1).

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