TIME SERIES APPROACH TO MODEL RATES OF INFLATION IN SRI LANKA

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DECLARATION

I declare that this is my own work and this Dissertation does not incorporate without acknowledgement any material previously submitted for a degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books)

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The supervisor should certify the Dissertation with the following declaration.

The above candidate has carried out research for the Masters in Business Statistics Dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

1. Name of the Supervisor: Dr. (Mrs.) SC Mathugama

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Signature of the Supervisor: Date:

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ABSTRACT

Inflation can have a variety of effects on the economy, both positive and negative. The negative effects, however, are more severe and also include other negative financial features like as a decline in the real value of money. The uncertainty around the rate of inflation in the future may influence customers away. Moreover, it may result in a decline in foreign investment in a country. Finding a useful Arch-type model for predicting inflation in Sri Lankan inflation rates was the aim of this study because inflation can be highly volatile and volatility clusters also possible which indicates the appropriateness of fitting ARCH type models for the inflation series. Furthermore, there was no evidence in the literature to support the fitting of an ARCH type model. The performance of ARCH type models was examined using the inflation data from January 1990 to September 2022. Due to the non-stationary nature of the inflation rate series, the first differenced series was obtained and the transformed series was tested for ARCH effect. The test revealed that the inflation series contains heteroscedasticity and correlation. In order to choose the optimal model, the study used the AIC and BIC criterion. The ARIMA (1,0,2), GARCH (1,1) model with student t distribution was chosen to simulate volatility, while ARIMA (1,0,2) was chosen as the mean model to predict future inflation series.

Keywords: Inflation, GARCH, volatility, heteroscedasticity

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LIST OF ABBEREVIATION

AR – Auto Regressive

ARCH – Auto Regressive Conditional Heteroscedasticity

ARMA – Auto Regressive and Moving Average

CBSL – Central Bank of Sri Lanka

CCPI – Colombo Consumer Price Index

CCPI (1952=100) – Colombo Consumer Price Index with base year 1952

DCS – Department of Census and Statistic

EGARCH - Exponential Generalized Autoregressive Conditional Heteroscedastic

GARCH - Generalized Autoregressive Conditional Heteroscedastic

NCPI – National Consumer Price Index