

**VECTOR ERROR CORRECTION AND MULTIPLE  
REGRESSION ANALYSIS TO FIND THE EFFECT  
FROM GROSS DOMESTIC PRODUCT, EXCHANGE  
RATE, CONSUMPTION AND TREASURY BILL RATE  
ON INFLATION IN SRI LANKA**

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Dissertation submitted in partial fulfillment of the requirement for the degree of  
Master of Science

Department of Mathematics  
University of Moratuwa  
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## DECLARATION

“I declare that this is my own work and this dissertation entitled “Vector Error Correction Analysis to find the effect from Gross Domestic Product, Exchange rate, Consumption and Treasury bill rate on Inflation in Sri Lanka” does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any University or other 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”.

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## ABSTRACT

Inflation is the most important macro-economic variable mainly used for economic management. There is a widespread agreement that high and volatile inflation can be damaging both to individual businesses and to consumers and hence, to the economy as a whole. When inflation is highly fluctuating and unable to correctly predict, individuals do not tend to invest money for various projects. The objective of this study is therefore to find out the effect of economic variables Gross Domestic Product (GDP), Exchange Rate (USD), Rice Price (RCP) and Treasury bill rate (INTRST) on CCPI using quarterly data on each variable for the period 1979-2005 in Sri Lanka. The Colombo Consumer Price Index (CCPI) is used as a proxy variable for inflation.

Unit root test confirmed that neither series are stationary in its levels nor first difference of all the series. Therefore Vector Error Correction methodology was carried out to find a suitable model for inflation (CCPI) and identified that series of GDP, USD and RCP granger cause CCPI but INTRST does not do so. The final model developed is:

$$\begin{aligned} CCPI_{(t)} = & 16.89848 + CCPI_{(t-1)} + 0.617551CCPI_{(t-2)} - 0.617551CCPI_{(t-3)} \\ & + 0.001062GDP_{(t-2)} - 0.001062GDP_{(t-3)} + 13.77885RCP_{(t-1)} \\ & - 34.18104RCP_{(t-2)} + 20.40219RCP_{(t-3)} \end{aligned}$$

According to the above model lag 2 of CCPI, lag 2 of GDP, lag 1 and 3 of RCP show a positive correlation with CCPI while lag 3 of CCPI, and GDP and lag 2 of RCP show a negative correlation with CCPI. It is therefore confirmed that GDP and RCP are the significant factors for inflation in Sri Lanka, and USD and INTRST have no significant effect on inflation. By using the selected model CCPI values are forecasted and the Mean Absolute Percentage Error (MAPE) of the fitted model was found less than 5%. Therefore above model is recommended as the suitable model for forecast CCPI.

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## LIST OF ABBREVIATIONS

Abbreviation	Description
CCPI	Colombo Consumer Price Index
GDP	Gross Domestic Product
USD	United states Dollar
RCP	Rice Price
INTRST	Treasury Bill Rate
DW	Durbin Watson statistic
AIC	Akaike Information Criterion
SIC	Schwarz Information Criterion
PACF	Partial Autocorrelation Function
ADFT	Augmented Dickey Fuller Test
VEC	Vector Error Correction
MAPE	Mean Absolute Percentage Error



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