

**MODELING SRI LANKAN GDP USING
MACROECONOMIC INDICATORS**

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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 Degree of Master of Science in Financial Mathematics Dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of Supervisor: Dr.(Mrs.) I.T.S Piyatilake

Signature of the Supervisor:

Date:

DEDICATION

This dissertation is dedicated to my family, without their love and support none of this would be possible. To my mother, for your continuous motivational words and for your love and advice only a mother can give. To my husband, my inamorato, words cannot express all that you do for me.

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ABSTRACT

Economics mainly divided into two parts, namely microeconomics and macroeconomics. Microeconomics study the individuals and business decisions while macroeconomics look at the decisions of county and government. That is, macroeconomics helps to understand the economy as a whole. Macroeconomic indicators are the key reflectors of the economic status of a country. Therefore, macroeconomic indicators have a notable role in sustaining the economic sustainable growth of a country. This study aimed at analyzing the relationships between macroeconomic indicators and the economic growth of Sri Lanka. Nineteen macroeconomic indicators were extracted from the Central Bank of Sri Lanka reports. The data were collected for the period of 1976-2018 from the World Bank website. This research mainly uses principal component analysis (PCA) in determining the existing patterns/similarities between the selected macroeconomic indicators. PCA method is specially applied because the selected macroeconomic variables were highly correlated. Forward regression analysis has been carried out to fit models with the use of identified principal components to determine the most prominent macroeconomic indicators which impact on Gross Domestic Product (GDP) and to identify the most reliable indicators which has the highest predictive power on GDP. The extracted two principal components (PCs) highly resemble the government activities and the human capital involved with the economy respectively. GDP can be predicted using the above said two PCs with a R-squared value of 99.74% which shows a high reliable predictive power. As this study focuses on large number of macroeconomic indicators it is very much essential in identifying the most prominent indicators among them. Therefore, as a novel concept Grey Relational Analysis (GRA) was constructed in ranking the selected macroeconomic indicators. Inflation, official exchange rate, and exports of goods and services have taken the first three rankings respectively, indicating that the government and responsible parties should pay more attention to avoid future economic recessions and to develop a sustainable economy.

Keywords: Macroeconomic indicators, PCA, Forward regression analysis, Grey Relational Analysis

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