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MODELLING OF INFLATION RATE IN MALAYSIA USING MULTIPLE LINEAR REGRESSION METHOD

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8.1 INTRODUCTION

Economic study states that inflation can be defined as sustained increase in the aggregate or general price level in an economy which indicates there is an increase in the cost of living. It is a general and continuous rise in the level of prices in an entire economy. Based on microeconomic studies, low inflation helps in fostering better economic growth.

The study focusses on finding certain significant factors of the inflation rate of Malaysia which the problems focus on finding the relationship of gross domestic product (GDP), exchange rate, import goods and services, unemployment rate, oil prices and solved consumer price index (CPI), and the inflation rate. The proposed problems will be solved statistically by using multiple linear regression model and the test of assumption of the method will be performed on the set of data chosen to check the validity of the data before resuming with the chosen model.

8.2   INFLUENCING FACTORS

There have been many studies done on inflation rate in Malaysia especially in finding the most influencing factors of chosen variables on the inflation rate.

Inflation is when the prices of most goods and services increase. When this occurs, the standard of living falls. It is due to each dollar buying less; therefore, more needs to be spent in order to get the same amount of goods and services (Amadeo, 2012).

The GDP is a basic determinant of a country's economic performance and is the market value of all final goods and services made within the borders of a nation in a year (Sictus, 2010).

Exchange rate is the rate at which one currency will be traded for another. A central bank with a mandate to stabilise CPI may raise interest rates to limit the inflationary impact on exchange rates from depreciation (Ferrero & Seneca, 2015). Imported goods are also deemed to put pressure on inflation. In a study based on 1973 to 1974 data it was discovered that imported goods could influence general price level to increase, whereas interest rate is one of the factors that affect the inflation rate (Mohamed, 2000).

Furuoka (2007) also analysed the relationship between inflation rate and unemployment rate by using the time series data from 1973 until 2004 in Malaysia with Johansen co-integration test. The test results showed that there was a negative relationship between unemployment rate and inflation rate in the long run. Hamilton (1983) estimated the influence of high oil prices on real incomes of the US and other developed countries. He statistically proves that there is negative correlation between oil price changes and real GNP growth in the US, the reason for most of the US economic recessions which was due to sharp rises in oil prices.

8.2.1 Multiple Linear Regression for Modelling Inflation Rate

The multiple linear regression (MLR) model offers the advantage of retaining all data and allowing for better estimation of the anticipated endpoint, but eventually overfitting occurs with the addition of descriptors (number of microstructural spacings type), reducing the model's accuracy (Schon et al., 2021).

Multiple linear regression is a statistical technique that is used to establish a mathematical relationship between numerous random variables. In other words, MLR evaluates the relationship between numerous independent factors and a single dependent variable. Once each of the independent variables has been established to predict the dependent variable, the data on the various variables may be utilised to make an accurate forecast about the magnitude of effect each variable has on the result variable. The model constructs a linear relationship that best approximates all the individual data points.

Although, maximum likelihood estimators are commonly used to estimate the parameters of MLR models with a nonnormal error structure because they are unbiased and fully efficient under specific regularity assumptions. Then, when the distribution of the error terms is non-normal, maximum likelihood equations cannot be solved analytically. As a result, numerical approaches are frequently employed in literature to produce maximum likelihood estimates of unknown model parameters. It should be emphasised that numerical approaches may encounter issues such as non-convergence of iterations, convergence to the incorrect root, and sluggish convergence (Yalçınkaya et al., 2021).

While other methodologies or inflation analysis exist, multiple regression analysis will be used. MLR analysis is frequently used in a variety of fields to forecast the outcome. For instance, multiple regression analysis was used to quantify the seepage of groundwater into circular tunnels, to investigate the degradation of Si-based Photovoltaic (PV) modules following prolonged outdoor exposure, and to address the