

## ABSTRACT

Stock prices are an important thing that investors should know before investing. Volatile stock prices require investors to know the factors that influence their changes. Stock price instability makes it very difficult for investors to make investments and affects the integrity they get. One of the factors that affect stock prices is macroeconomic factors consisting of rupiah exchange rate ( $X_1$ ), inflation ( $X_2$ ), and SBI interest rate ( $X_3$ ). One statistical method that can be used to model fluctuating data is multivariable truncated spline nonparametric regression with Generalized Cross Validation (GCV) optimal knot point selection method. This study aims to model macroeconomic factors against Telkom's stock price using multivariable truncated spline nonparametric regression with the optimal knot point selection method that minimizes GCV. Many knots used are a combination of 1 and 2 and the order used is a combination of 2, 3, and 4. The best multivariable truncated spline model is achieved on a knot combination (2,2,2) with the order  $X_1$ ,  $X_2$ ,  $X_3$  being 3, 2, 2 which results in an  $R^2$  value of 92.71% included in the strong model criteria. In the evaluation of model performance obtained a MAPE value of 1.857% which shows the model has excellent forecasting ability. In this study, a Graphical User Interface (GUI) program was formed R that can facilitate data analysis and produce more attractive display output.

Keywords: Stock Price, Macroeconomic Factors, Multivariable Spline Truncated, GCV, GUI