

ABSTRACT

The capital market plays an important role in driving national economic growth. Stocks are capital market instrument with a relatively high level of investor participation. The performance of the Indonesia's stock market can be observed through the Composite Stock Price Index (CSPI), which reflects the movement of all stocks listed on the Indonesia Stock Exchange (IDX). The CSPI movement is influenced by various global and domestic macroeconomic factors, such as the Dow Jones Industrial Average (DJIA) index and the money supply. Identification through scatter plots indicates a linear relationship pattern between the CSPI and the DJIA, while the relationship pattern between the CSPI and the money supply changes at certain intervals, therefore a semiparametric regression model with a truncated spline approach is used. Model parameters are estimated using the Ordinary Least Squares (OLS) method. The optimal knot points are determined using the Generalized Cross Validation (GCV) criterion with the minimum value. This study uses monthly data from January 2019 to September 2025. The dataset is divided with a proportion of 80:20 into 64 in sample data and 17 out sample data. Based on the analysis result, the best semiparametric regression model with a truncated spline approach is obtained at order 2 (linear spline), with 3 knot points located at $\xi_1 = 6,136,552$, $\xi_2 = 6,238,267$, and $\xi_3 = 7,911,484.49$ and a GCV value 49,422.32. The coefficient of determination value of 0.92 indicates that 92% of the CSPI variation can be explained by the DJIA and money supply variables in the model. Model performance on out sample data is evaluated using the Mean Absolute Percentage Error (MAPE) value. The MAPE value obtained is 5.0386%, indicating that the model has excellent predictive ability.

Keywords: CSPI, Dow Jones Index, Money Supply, Semiparametric Regression, Truncated Spline