

ABSTRACT

Investment is the activity of allocating funds or capital into assets with the expectation of generating returns or increasing value over time. Most individuals tend to choose investment instruments that are able to provide stable returns with a relatively low level of risk, especially for long-term goals. One popular form of investment is bonds, which are debt securities issued by governments or corporations as a means of financing. In considering bond investments, it is essential for investors to understand the expected return or yield. The relationship between yield and bond maturity is captured by the concept of the term structure of interest rates, which is visually represented by the yield curve. One of the methods commonly used to form the yield curve is the Nelson Siegel (NS) model which uses three main parameters to describe the level, slope, and curvature of the yield curve so that it can represent the shape of the curve flexibly. This study utilizes transaction data from 53 Indonesian government bond series with Fixed Rate (FR) codes as of November 13, 2025. Parameter estimation is conducted using the Nelder-Mead algorithm by minimizing the Sum of Squared Errors (SSE). Model accuracy is evaluated using the Mean Absolute Percentage Error (MAPE), resulting in a value of 1.744%. This indicates that the NSS model accurately represents the yield curve and can be effectively used as a tool for analyzing sovereign debt instruments in the financial market.

Keywords: Investment, Bonds, Yield, Yield Curve, Nelson Siegel, Nelder-Mead, MAPE