ABSTRACT

The global gold price fluctuates significantly due to various global economic factors, monetary policies, and financial market conditions. The high volatility of gold prices requires forecasting methods capable of capturing complex movement patterns to support more accurate decision-making. The ARIMA (Autoregressive Integrated Moving Average) model is frequently used in time series analysis to predict gold prices based on historical data. This model has limitations in handling non-constant volatility. The GARCH (Generalized Autoregressive Conditional Heteroskedasticity) model serves as an alternative that can capture the volatility dynamics in global gold price data. This study applies the ARIMA-GARCH model to forecast global gold prices, using the Maximum Likelihood method for parameter estimation. The data used consists of in-sample data for the period from March 1, 2019, to August 31, 2024, and out-sample data for the period from September 1, 2024, to September 14, 2024. The forecasting results show that the ARIMA([14],1,[2,14])-GARCH(1,1) model is the best model for capturing the volatility patterns of global gold prices. This model shows a very low error rate with a MAPE value of 0,89%, and is therefore considered effective for forecasting global gold prices. This study is expected to serve as a reference for investors, financial analysts, and policymakers in predicting gold price movements to support investment strategies and optimize market risk mitigation.

Keywords: Global Gold Prices, Volatility, Forecasting, ARIMA, GARCH, MAPE