ABSTRACT

Stock prices often fluctuate creating uncertainly which becomes a crucial aspect in assessing investment risk. Volatility represents the level of uncertainty related to stock return outcomes. The Autoregressive Conditional Heteroskedasticity (ARCH) and Generalized ARCH (GARCH) models have been widely applied to model volatility, however, the conventional GARCH model is limited in capturing the asymmetric effect, where negative news tends to increase volatility more sharply than positive news. To overcome this limitation, the Exponential GARCH (EGARCH) and Asymmetric Power ARCH (APARCH) models were developed to capture asymmetric effects. This study models and forecasts the weekly stock volatility return of PT Bank Central Asia Tbk (BBCA) for the period from January 1, 2018 to September 28, 2025 using the EGARCH and APARCH approaches. Parameter estimation was carried out using the Maximum Likelihood Estimation (MLE) method. The best model obtained was ARMA(2,2) model, while the best volatility model was EGARCH(2,1). Model selection was based on the Symmetric Mean Absolute Percentage Error (SMAPE) value were 29,5086% in training data and 31,2241% in testing data. Based on volatility forecasting for the next 10 weeks, the maximum Value at Risk (VaR) of 7.1226%.

Keywords: Stock, PT. Bank Central Asia Tbk, Forecasting, Volatility, EGARCH, APARCH, Value at Risk.