

ABSTRACT

Shallots are one of the horticultural commodities widely used by the public, both as a food ingredient and as a traditional medicinal product. Shallot prices often experience considerable fluctuations due to seasonal factors, weather conditions, climate change, import policies, inflation, and complex market dynamics. Such high volatility may cause the residuals of an ARIMA model to exhibit heteroscedastic variance, indicating that the ARIMA model alone is often insufficient to capture the data optimally. The ARIMA-GARCH model is therefore employed to address heteroscedasticity by modeling the conditional mean of the series with ARIMA and the volatility of the residuals with GARCH. This study aims to apply the ARIMA-GARCH method to shallot prices in Central Java Province for the period from January 1, 2025 to October 31, 2025. The results indicate the presence of heteroscedasticity in the shallot price data, necessitating volatility modeling using GARCH. The best-fitting model was ARIMA(2,1,2)-GARCH(2,1), with an AIC value of -17.67020, the lowest among the candidate models.

Keywords: Shallot Prices, ARIMA-GARCH, Heteroscedasticity, Volatility, Central Java Province