

## **ABSTRACT**

*Palm oil is a basic ingredient in the production of various products. Data shows the use of palm oil as a basic ingredient in the production of various products, namely the food industry, the consumer industry, and for the production of bioenergy. Indonesia is one of the countries with the highest number of CPO production and exports in the world. As a producer, the volatility that occurs can increase various risks. Option is one of instrument that can be used for hedging.*

*This study was conducted to examine the implementation of options contracts on the commodity of palm oil/CPO with a long straddle strategy. There are two approaches to calculating volatility, namely the Black Scholes and GARCH models. This study compares the crisis and non-crisis conditions in that period.*

*The comparison of the percentage values of the average mean square error (AMSE) of the two models was used to conduct the test using the data of daily price of palm oil in rupiah from 1996 to 2021. The testing period took a month using data from February 1996 - December 2021 and three months using data from April - December 2021*

*The results show that the Black Scholes model was better than the GARCH model in the one-month period of put option contracts during crisis conditions with a smaller error value of 2.43%. In other conditions and periods, the GARCH model was better than the Black Scholes model particularly during crisis, the one-month period call was 3.85%, the three-month period call was 15.16%, and the three-month put was 8.709%. Meanwhile, in non-crisis conditions in the one-month call was 1.13% and put was 1.04%, and three-month call was 3.20% and put was 2.74%. Additionally, the average profit using the long straddle strategy noted higher profit potential during crisis for one-month period of 50.03%, three-month period of 54.47%. As for non-crisis condition, profit potential for one-month period was 52.25% and three-month period was 51.32%, with a maximum profit value of up to 75.50%. To conclude, the GARCH model was recorded to have a higher profit potential than the Black Scholes model.*

*This study is expected to contribute to the theoretical aspect by confirming that the heteroscedasticity data of the GARCH model shows a lower AMSE value, so that the GARCH model is more accurate to use. As well as the theoretical aspect to investors that using the long straddle strategy can provide benefits. Calculations volatility with the GARCH model have the potential to provide higher profits than the Black Scholes model. The 3-month period provides higher profit potential than the 1-month period in both models.*

*Keywords: Black Scholes, CPO, GARCH, Long Straddle*