

## Abstract

Option is a kind contract between two parties, which either party have right to sell or buy a certain stock at an assigned time or price. The option that will be discussed is European options. European options is an agreement between the sellers and the buyers, in which the seller ensures that the buyer has the rights to buy the stock with exact amount and price assigned at the due date. With the growth of the option market, there's a lot of ways to determine the options value price while minimizing loss and maximizing profits. One of the ways to determine the value price of European options is using the Black-Scholes equation, a partial differential equation. The numeric solution for the Black-Scholes equation is determined using Finite Difference Method. In this final project, the author aims to calculate the value of the option to buy the European type of Black-Scholes equation using the method of difference to the explicit scheme. Based on the results of the calculation obtained option value buy Unilever Indonesia at maturity (17 April 2018), That the buy option value is 5016 when the stock price is 45000. As for the price of options to buy Bank Central Asia at maturity (17 April 2018), That the buy option value is 1690 when the stock price is 16300. From the results of testing stock price changes, deal price, maturity date, and interest rate conducted, the following information can be obtained: First, the increase in the price of the deal caused the value of options to decrease. Second, the higher the interest rates so the value price of options to buy at the beginning of the contract and the next six months will be higher while the value fixed maturity options. Third, The longer the time to maturity the value of options to buy at the beginning of the contract and the coming six months will be higher while the value prices fixed maturity options. Fourth, the rise in stock prices led to value options also increased.

**Keywords:** Option, European Call Option, Black-Scholes Equation, Finite Difference Method Schema Explicit.