ABSTRACT

Stock Options is an official contract which give liberties (without obligations) to the option owner to buy or sell stock assets at a certain price within a specified time. American option is an option which can be exercised at the time of maturity or during the term of the option. American option is the option most widely traded options. So that investors can make informed decisions in the real market, the price of the options and boundary exercises of American type needs to be determined. Black-Scholes modeling framework can be used to model the American options with dividend payment. Analytic solution Black-Scholes modeling for American option has not been found because the model contains boundary exercise, so that a numerical approach calculated for the price of American option and boundary exercise. Numerical methods which generally used to solve the problem of American option is explicit finite difference method that can be solved by Projected Successive Over Relaxation (PSOR) algorithm. From the methods and algorithms, American options value will be obtained through calculation of Black-Scholes modification model. After that, there will be a validation of outcome options price in market with the result of formula. Result of the boundary excercise gives a value which meet the equation $V \geq max\{K - S, 0\}$*. To see effects for the option value, performed sensitivity to volatility, interest rate, and expiration date.*

Keywords *: Option, American Options, Black-Scholes, Explicit Finite Difference Method.*