ESTIMATION OF EUROPEAN CALL OPTION WITH DIVIDEND IN BLACK-SCHOLES FORMULA USING ENSEMBLE KALMAN FILTER METHOD

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Abstract
Option is a financial contract that give rights to its owner to buy (call option) or sell (put option) an amount basic asset (underlying is revaluation) at a given firm particular directive price (strike price) before or even while contracts maturity value (maturity date / expiration date). One of model which is utilized for estimating option price is Black Scholes' formula. But in Black Scholes' formula there's no dividend division assumption, therefore Black Scholes' formula is expanded for option that espoused by dividend. Consider that stock price move is fluctuate, such that the price of call option can't directly be solved, so to estimate it is required volatility. On this Final Project will be worked through about estimating price of European Call Option espoused by dividend utilizes Ensemble Kalman Filter (EnKF) method, where the system model is GARCH (1,1) model and its measurement model is market option price. It because of Ensemble Kalman Filter (EnKF) method is one of data assimilation method which is suitable for estimating a variety strongly nonlinear systems model problem.

Key word: Option, call, dividend, volatilitas, GARCH (1,1), Ensemble Kalman Filter.