Abstract

Bonds are debt securities issued by a particular agency. Party that issued the bond will pay a coupon in exchange for a fixed rate at a certain period and pay off the loan principal to the purchaser of the bonds. Zero coupon bonds are bonds that do not give periodic coupon payment but overall revenue will be paid when the bond matures. Coupon bonds and their prices are very sensitive to interest rate fluctuations. Therefore, to predict the price of the bond, it is required prediction of interest rates. Vasicek model is one of the models used to predict interest rates. After obtained the interest rates using Vasicek model, the bond price calculation using interest rate predictions can be obtained from Vasicek model.

The result of interest rate predictions using Vasicek model can not capture the fluctuation of interest rate on validation data. Parameter value that used for the speed of reversion is 1 which is the optimum value of the parameter with the minimum squared error on the historical data was 0.0034. Vasicek model can predict interest rates with squared error of 0.0135 and obtained maximum interest rates differential prediction with the validation data by 0.00057. Research showed that interest rate prediction result of Vasicek model is good for a short time.

Keywords: bond price, interest rates model, Vasicek model, prediction, Monte Carlo