URN etd-0407109-183711-814
Author Min-Chang Li
Author's Email Address No Public.
Statistics This thesis had been viewed 34 times. Download 0 times.
Department
Year 2005
Semester 1
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Forecasting Taiwan Option Price by Using Neural Network
Date of Defense 0000-00-00
Page Count 50

Keyword
Neural Network
Implied Volatility
Taiwan Index Option

Abstract
As the thriving of option trading, the continually emerging of derivatives, and the constantly creating of financial tools in Taiwan, how to appraise these financial products are gradually becoming the valuable issues. Especially, the domestic and the international scholars have paid close attention on the evaluation of options. However, the Black-Scholes Pricing Model, which derived in the 1973 and the foundation of the later derivatives pricing, is the simplistic model of reality that not suits with the real market due to its prerequisite. Since that, the following researchers are modifying the B-S model for more proper estimation; for example, the developing of Artificial Intelligence algorithm that utilizing the computer to simulate the human thinking patterns in early 1990's, has been wildly applied in the field of financial investment and property evaluation; among them, the Back-Propagation Neural Network is the most studied topic.
Accordingly, this study aims to investigate the forecasting of Taiwan index option price with the implied volatility by Back-Propagation Neural Network. Besides, this study tries to forecast the option's implied volatility by using of the implied volatility and the historical volatility methods as well. By taking TXO transaction data in 2004 and 2005 as research sample, plus MAE and RMSE as performance predictions, we have the following empirical conclusions: (1) When options are classified by in-the-money, at-the-money and out-of-money; the result showing the neural network has more accurate forecasting in the out-of-money, since MAE and RMSE are the smallest while forecasting C or C/S of option prices. (2) When options are classified by the length of maturity, like short-term, middle-term and long-term; it has the most precise forecasting on the middle-term. (3) In the using of implied volatility on performance prediction, the neural network method has the worst predicting performance. The historical and the implied volatility methods have approximately equal effects on the forecasting, but the implied volatility method has the distinct forecasting performance in terms of the long-term period or maturity data. (4) For the forecasting of implied volatility, the implied volatility method has the best performance in general. The second best is the historical volatility method and the last one is the neural network method. There is a significant difference especially in the long-term prediction and the longer days to the maturity. There could be two reasons for causing this: (1) The forecasting interval of neural network is half an year in average, appeared longer than the other two methods, so it would cause the bigger forecasting inaccuracy. (2) The forecasting objective value is the option price, not the implied volatility, so it would cause the skew of the training.
Advisory Committee Huang,Hung-Si - advisor

Files No Any Full Text File.
Date of Submission 2006-01-16