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STUDY ON BLACK-SCHOLES STOCK OPTION PRICING MODEL BASED ON DYNAMIC INVESTMENT STRATEGY

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Abstract. *In this paper, we presents a new option pricing model based on dynamic investment strategy. The new option assumes that an investor sets up a stock exchange strategy based on the changes of the stock price when the investor has held options. Within the valid period of the options, the investor may buy stocks based on an investment strategy for call option or he may sell stocks based on an investment strategy for put option. A linear dynamic investment strategy is proposed, and the intrinsic value functions for the cases of call option and put option are derived respectively. Based on the Black-Scholes option pricing theory, new option pricing models are finally obtained respectively by solving complex integral problems. Furthermore, the relationship and the disparity on the option prices between the new options and the classical ones are discussed. Because of the investment strategy within the option validity, the investor can easily reduce anticipative loss, thus the price of the options based on the investment strategy is lower than those of the classical options.*

Keywords: Call option, Put option, Option pricing model, Dynamic investment strategy

1. **Introduction.** Since the proposal of the Black-Scholes theory in 1973, it has become one of the most important theoretical methods to tackle the pricing problems of various financial derivative securities. This topic has been extensively investigated in the past by many researchers.

The first aspect of the study is the pricing theory about financial derivative securities except stock options, including foreign exchange options, interest rate options, futures options, stock price index options, etc. These works also include real option, an option that takes the real investment goods as the fundamental assets. The second aspect of the work is to relax the hypothesis of the Black-Scholes theory, aiming to obtain a pricing model close to real market. The research includes stochastic interest rate problem, assets with income, the price of fundamental assets with jump or discontinuous risks, the variance of return on fundamental assets are not constant, etc. The third field of the research focuses on building a new type of options, which are derived from the classical European option and American option by combination and other techniques. One of the motives of building a new type of options is to improve the irrationality of the standard Black-Scholes option pricing model. The other motive is to create new financial speculative instruments. These new options are called Exotic Options, inclusive of Package Options,