Scientific Computational European Option Pricing Assessment

Performance and Robustness Analysis Synopsis of a Wavelets Technique "SWIFT"

ABSTRACT

Quantitative financial risk research communicates to different types of style of options in many ways. An American- and European-style option in particular tends to be investors and/or researchers focus but, they differ in four significant ways, the underlying, the right to exercise, trading of index option and settlement price.

The research focuses on the numerical methods used to confirm and calculate the constraints, vigor and effectiveness of pricing European-style options. A European-style option gives the buyer or seller a chance to exercise the contract only at the maturity date. Financial instruments (bonds, stocks, derivative etc.) that are traded directly between the parties (over the counter) are mainly European options. The research is an experimental study with a motivation to successfully assess/evaluate the use of the SWIFT method technique.

The characterizations of the use of the scientific computation valuation methods based on the high efficiency performance and robustness of Cash-or-Nothing, European and Long Maturity Options were investigated; as well as in the context of Fat-tailed Assets Pricing Distributions and Multiple Strikes Valuations.

An original MATLAB code replication of the SWIFT (Shannon Wavelet Inverse Fourier Technique) method was created using scientific computation valuation methods from Mathematical and Computational Finance Theory. Numerical methods examples were established and implemented with the development assessments of computational results.

The Performance and Robustness Analysis Synopsis of the Wavelets Technique "SWIFT" were explained with future prospects to improve the "SWIFT" method. Results of scientific computation valuations discovered were also deliberated.