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Entitled

PRICING ASIAN OPTIONS DURING CRISES WITH THE IMPACT OF EXOGENOUS EVENTS

by

Moath Ali Bakour

Faculty Advisor

Prof. Youssef El Khatib, Department of Mathematical Sciences

College of Science

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Abstract

Asian options are path-dependent options since their payoff is built on the prices of the underlying asset over a time period. The Asian option pricing problem is primarily subject to the prediction model for asset prices. The pioneer Black Scholes paper suggests a GBM- Geometric Brownian motion. The Black-Scholes formula suffers from several shortcomings. For instance, the GBM does not take into consideration crises. Another problem with the Black-Scholes model is that it does not deal with the impact of external events. This work aims at a suggested model that encompasses the impacts of crises and external events together. It is based mainly on models with crises and models with an external event impact. The underlying asset is then driven by a stochastic differential equation with a modulated Markov GBM and an increase in volatility. Determining the price of an Asian option will be explored under a suggested model. Moreover, numerical techniques will be employed to get a numerical solution and to simulate trajectories for the prices of the options and the underlying asset.

Keywords: Asian Options, Brownian motion, Ito formula, Continuous Time Markov Chain.