



MA374 Extra Assignment

Sensitivity Analysis of Exotic Options

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Problem Description

Exotic options are a class of financial derivatives that have payoffs that are more complex than those of traditional options, such as vanilla call and put options. They are called "exotic" because their payoffs are usually based on more complex financial variables than just the price of the underlying asset. These variables can include interest rates, foreign exchange rates, commodity prices, and even weather conditions.

Exotic options are important because they provide investors with a wide range of financial tools that allow them to manage their risk exposure in more sophisticated ways than traditional options. Exotic options can be customized to meet specific needs of investors, allowing them to hedge against particular risks or take advantage of unique market conditions.

For example, gap options can be used to manage risk in markets that are volatile, providing investors with a way to limit their downside while still participating in the upside potential. Shout options, on the other hand, can be used to capture profits in markets that are trending strongly, allowing investors to lock in gains while still leaving room for further upside.

In the course of MA373, we have learned about many types of exotic options which include gap options, shout options, and binary options. Each of these options has a unique payoff structure and requires a different pricing formula. In this assignment, I have discussed the basic concepts of each of these options and their pricing formulae along with the sensitivity analysis of each of them.

Starting from the next page I have presented the detailed explanation of each of these option, proof of the pricing formulae and the sensitivity analysis plots.