

Investigating the Black Scholes European Option Valuation Model using Real-Life Applications

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Abstract

This project investigates creating an application that downloads stock information from the Internet and applies to it the famous Black Scholes algorithm, outputting the result. The Black Scholes algorithm is used in modeling price variation over time of securities that are heavily traded. This application prompts the user for one of several available heavily traded stocks, pulls that stock's information from the Internet, asks for parameters such as strike price and length of option, and applies the Black Scholes algorithm accordingly. The goal of this project is to create an easy to use application that gives the user an insight into models such as Black Scholes can be very hazardous in trying to predict market behavior, as seen in the subprime meltdown that triggered today's current global recession.

What is Black-Scholes?

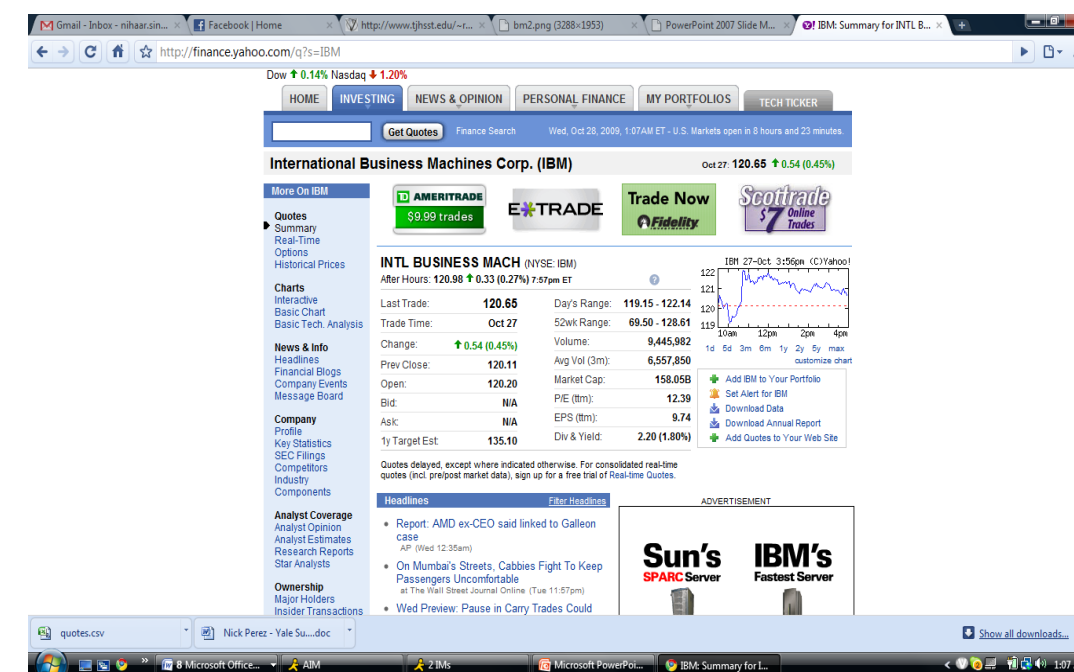
- Black-Scholes is a mathematical model of price variation
- Heavily traded assets follow geometric Brownian motion
- Constant drift and velocity of these assets
- One of the most famous financial processes

User Customization

The program is thoroughly customized. At the start of the program the user is prompted to choose any stock by entering the stock symbol. The user is then given the option of whether to run Black Scholes on a call option or a put option (call and put options are contracts for the right to buy or sell a security at a certain price, regardless of actual price fluctuations). The program then pulls the real-time stock price of that stock and reports it to the user, asking what he/she would like to set the strike price as (it is easier to choose a strike price knowing what the stock price is). Finally, the user is asked the number of months till the stock expires.

Reading in Data

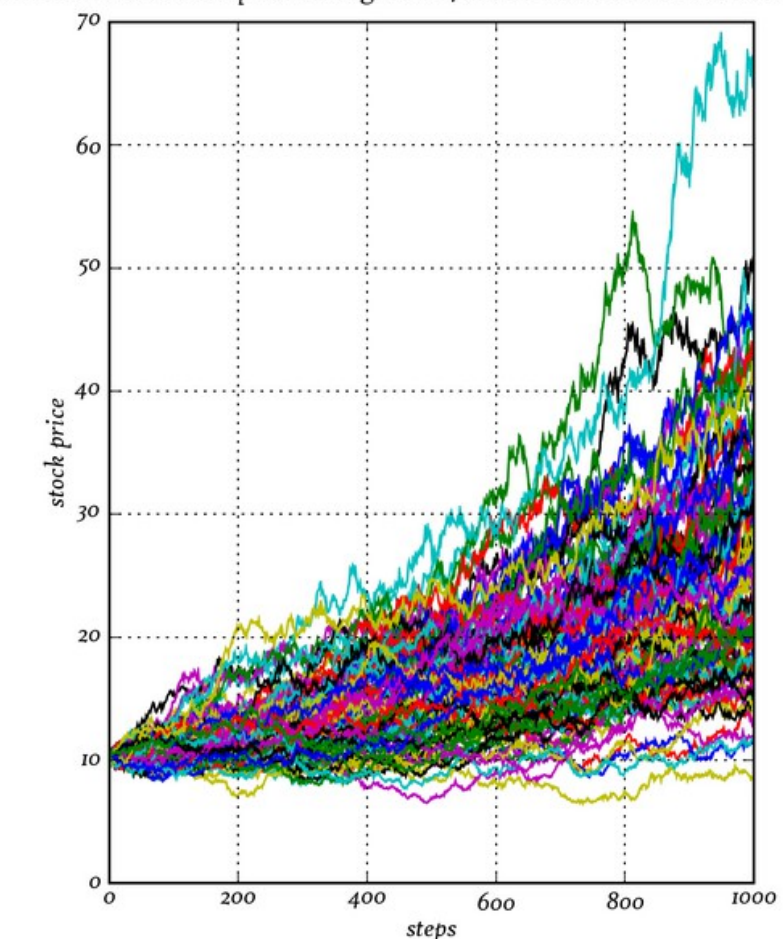
- Source code is imported from the Internet
- Data is parsed for keywords
- Last Trade: "`</small><big>`
- P/E : "`:</th><td class="yfnc_tabledata1">`
- Parsing data means source must be permanent
- Source utilized is Yahoo! Finance



<http://finance.yahoo.com/q?s=IBM>

Brownian Motion

Simulations 100 Steps 1000 Sigma 0.400000 Mu 1.000000 So 10.222



<http://www.alexfb.com/twiki/pub/PtPhysics/WebHome/bm2.png>

Class Structure

- The Main method prompts for the stock symbol and imports the data
- Main method also calls for the Black-Scholes implementation
- The Black-Scholes class calculates the price
- Black-Scholes class also returns the result
- Result is outputted in the Main method

