STA 372-6 Project 4: Option Pricing

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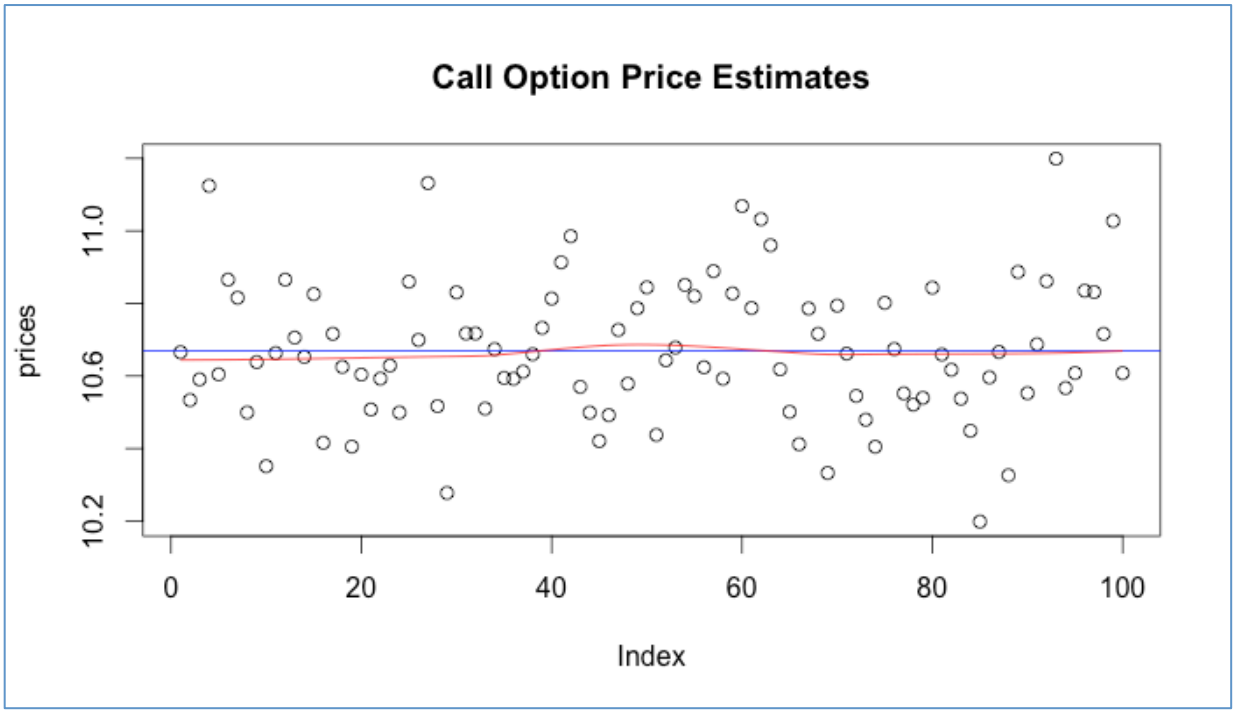
[1] Stock Choice

We chose Facebook as our stock option to price. The call option price is an average of the ask and bid prices ($10.30 and $10.40, respectively).

Initial Price	Maturity Date of Call Option	Call Option Price	Strike Price	Risk Free Rate	Reported Std. Dev.
$104.04	June 17th 2016 (153 days)	$10.35	$105.00	0.004	0.34

[2] Pricing the Vanilla Call Option

Using the pricing function we created from the class code in R, we priced the Facebook call over 100 estimations of the price function to get an average price of $10.67. The graph shows the generated estimated prices, blue shows the mean (10.67), and red is a line of best fit.



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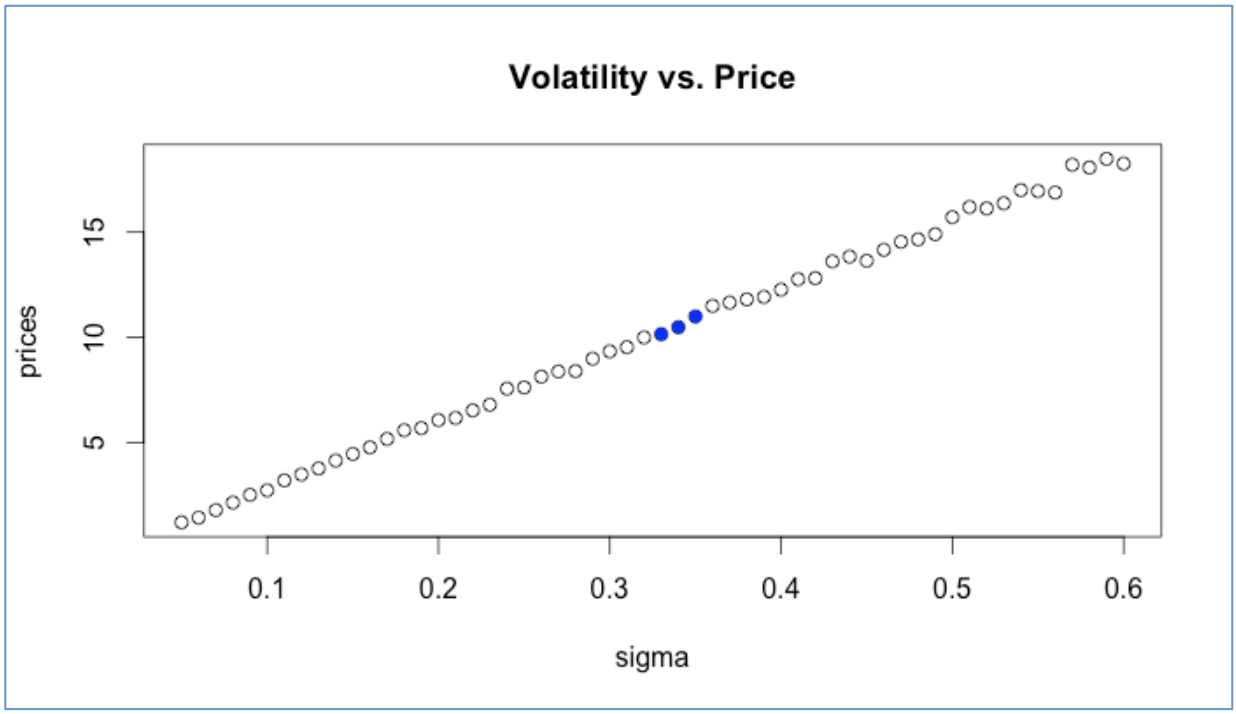
[3] Estimating Implied Volatility

We estimated the option price using a range of volatilities between 0.05 and 0.6 and plot these output prices. The blue points are the prices closest to our target price of $10.35. This makes sense as the reported standard deviation taken from Yahoo! Finance used in the original model is 0.34.

Iteration	Sigma	Prices
29	0.33	$ 10.15118
30	0.34	$ 10.48103
31	0.35	$ 10.99075



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[4] Pricing the Exotic Call Option

Our exotic call option is a simple binomial option of a return of $10.00 if the difference between the strike and the price is non-negative. Using the modified pricing function we developed in R, we again priced the exotic call 100 times and found a mean price of $4.33. The graph shows the generated estimated prices, blue shows the mean (4.33), and red is a line of best fit.