

R Markdown assignment 3#

Abhishek Vijaykumar

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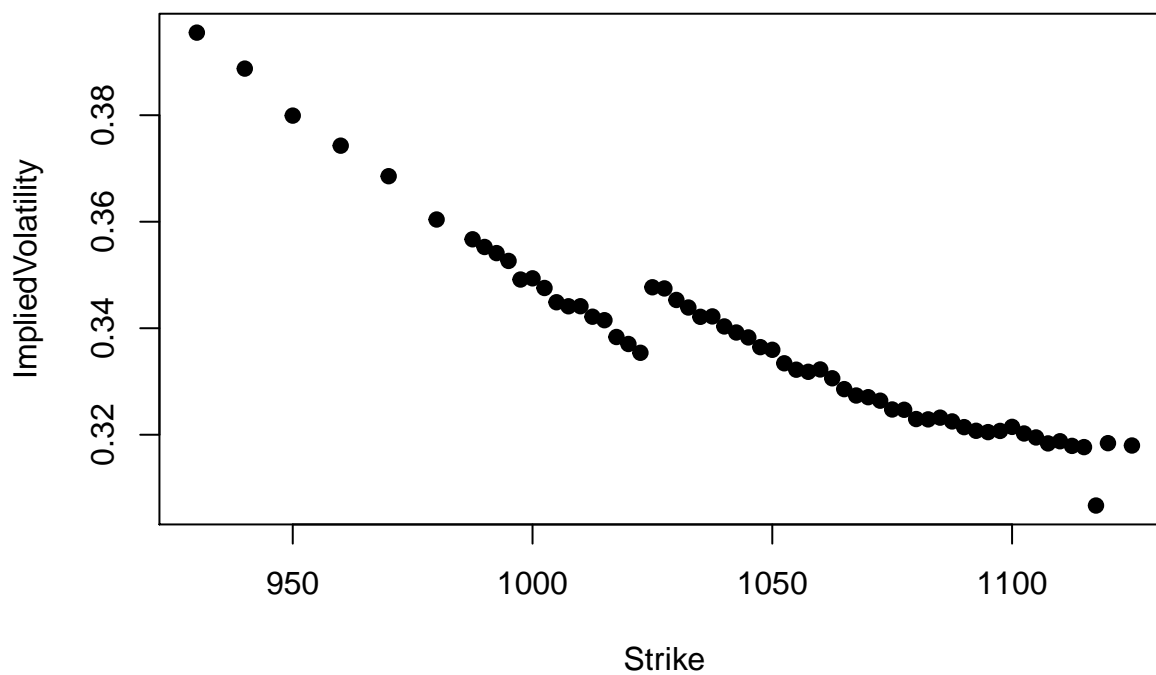
Total Valuation of the Call and Put Options

| Type | TotalCallValuation |
|------|--------------------|
| Call | 6393.925 |
| Put | 25750.000 |

Total Open Interest of all the in the money Options

| Type | TotalOI |
|------|---------|
| Call | 33 |
| Put | 322 |

Plot of Implied Volatility vs Strike Price



Exercise Problem: Finding total Value of Options using GBSOption

| type | strike | underlying | Time | r | b | sigma | OptionValue |
|------|--------|------------|------|------|---|-------|-------------|
| c | 48 | 14 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 80 | 8 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 59 | 12 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 65 | 8 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 8 | 24 | 1 | 0.01 | 0 | 0.3 | 15.9866722 |
| p | 40 | 96 | 1 | 0.01 | 0 | 0.3 | 55.9533528 |
| c | 8 | 55 | 1 | 0.01 | 0 | 0.3 | 46.9608496 |
| p | 68 | 86 | 1 | 0.01 | 0 | 0.3 | 17.9917504 |
| c | 28 | 22 | 1 | 0.01 | 0 | 0.3 | 0.0017186 |
| p | 63 | 99 | 1 | 0.01 | 0 | 0.3 | 35.9700126 |
| c | 68 | 97 | 1 | 0.01 | 0 | 0.3 | 28.9758751 |
| p | 53 | 77 | 1 | 0.01 | 0 | 0.3 | 23.9800177 |
| c | 11 | 60 | 1 | 0.01 | 0 | 0.3 | 48.9591837 |
| p | 28 | 64 | 1 | 0.01 | 0 | 0.3 | 35.9700125 |
| c | 99 | 33 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 64 | 6 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 71 | 92 | 1 | 0.01 | 0 | 0.3 | 20.9852533 |
| p | 24 | 61 | 1 | 0.01 | 0 | 0.3 | 36.9691795 |
| c | 62 | 58 | 1 | 0.01 | 0 | 0.3 | 0.6569514 |
| p | 56 | 59 | 1 | 0.01 | 0 | 0.3 | 3.8324997 |
| c | 90 | 42 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 5 | 38 | 1 | 0.01 | 0 | 0.3 | 32.9725115 |
| c | 0 | 23 | 1 | 0.01 | 0 | 0.3 | 22.9808413 |
| p | 63 | 45 | 1 | 0.01 | 0 | 0.3 | 0.0000542 |
| c | 53 | 65 | 1 | 0.01 | 0 | 0.3 | 12.0057214 |
| p | 64 | 11 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 30 | 13 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 78 | 22 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 59 | 54 | 1 | 0.01 | 0 | 0.3 | 0.3895340 |
| p | 35 | 10 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 53 | 25 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 70 | 8 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 3 | 8 | 1 | 0.01 | 0 | 0.3 | 4.9958351 |
| p | 88 | 75 | 1 | 0.01 | 0 | 0.3 | 0.0892954 |
| c | 37 | 41 | 1 | 0.01 | 0 | 0.3 | 4.1913767 |
| p | 45 | 6 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 69 | 94 | 1 | 0.01 | 0 | 0.3 | 24.9794822 |
| p | 96 | 56 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 6 | 5 | 1 | 0.01 | 0 | 0.3 | 0.0030191 |
| p | 77 | 91 | 1 | 0.01 | 0 | 0.3 | 14.0625242 |
| c | 68 | 50 | 1 | 0.01 | 0 | 0.3 | 0.0002405 |
| p | 17 | 72 | 1 | 0.01 | 0 | 0.3 | 54.9541858 |
| c | 57 | 83 | 1 | 0.01 | 0 | 0.3 | 25.9783513 |
| p | 92 | 27 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| c | 6 | 0 | 1 | 0.01 | 0 | 0.3 | 0.0000000 |
| p | 22 | 48 | 1 | 0.01 | 0 | 0.3 | 25.9783424 |
| c | 9 | 66 | 1 | 0.01 | 0 | 0.3 | 56.9525198 |
| p | 90 | 93 | 1 | 0.01 | 0 | 0.3 | 4.8799087 |
| c | 64 | 85 | 1 | 0.01 | 0 | 0.3 | 20.9833930 |
| p | 67 | 46 | 1 | 0.01 | 0 | 0.3 | 0.0000071 |
| c | 62 | 54 | 1 | 0.01 | 0 | 0.3 | 0.1176056 |
| p | 20 | 45 | 1 | 0.01 | 0 | 0.3 | 24.9791753 |
| c | 77 | 96 | 1 | 0.01 | 0 | 0.3 | 18.9970543 |
| p | 52 | 35 | 1 | 0.01 | 0 | 0.3 | 0.0000018 |
| c | 13 | 98 | 1 | 0.01 | 0 | 0.3 | 84.9291962 |
| p | 10 | 92 | 1 | 0.01 | 0 | 0.3 | 81.9316951 |

$$\frac{\text{sum}}{1378.742}$$