Appendix -1

In this section the researcher wants to give advice about all Excel Formulas that used in this research data preparation and organization, and provide most specific process which minimised the chance of error in data calculation

_Calculation of Black-Scholes Option Pricing Formula as per formula:_

\[
V_{\text{cop}} = PN\left(\frac{\log_e\left(\frac{P}{P_E}\right) + (R_f + \frac{\sigma^2}{2}t)\,t}{\sigma\sqrt{t}}\right) - e^{-R_f\,t}P_EN\left(\frac{\log_e\left(\frac{P}{P_E}\right) + (R_f - \frac{\sigma^2}{2}t)\,t}{\sigma\sqrt{t}}\right)
\]

\[
V_{\text{pop}} = e^{-R_f\,t}P_EN\left(-\frac{\log_e\left(\frac{P}{P_E}\right) + (R_f + \frac{\sigma^2}{2}t)\,t}{\sigma\sqrt{t}}\right) - PN\left(-\frac{\log_e\left(\frac{P}{P_E}\right) + (R_f - \frac{\sigma^2}{2}t)\,t}{\sigma\sqrt{t}}\right)
\]

Let \( A = \log_e\left(\frac{P}{P_E}\right) = (LN(P/P_E)) \)

\( X = \sigma\sqrt{t} = (\sigma \times ((t)^{1/2}) \)

\( B1 = \left(R_f + \frac{1}{2}\sigma^2\right)t = ((R_f + (0.5) \times ((\sigma)^2)) \times t) \)

\( C1 = (A + B1) \)

\( D1 = (C1/X) \)

\( B2 = \left(R_f - \frac{1}{2}\sigma^2\right)t = ((R_f - (0.5) \times ((\sigma)^2)) \times t) \)

\( C2 = (A + B2) \)

\( D2 = (C2/X) \)

\( N1 = N(D1) \)

\( N2 = N(D2) \)

\( R = (P \times (N1)) \)

\( Q = \left(\left(P_E \times \left(\text{EXP}(-R_f \times t)\right)\right) \times N1\right) \)

Value of Call option \( (V_{\text{cop}}) = (R-Q) \)

_Similarly_

\( N1' = N(-D2) \)

\( N2' = N(-D1) \)
\[ R = (P * (N1')) \]
\[ Q = \left( P_e \times \left( \text{EXP}(-R_f \times t) \right) \right) * N2' \]

Value of Put Option \( V_{pop} = (Q - R) \)

Calculation of Standard deviation of the continuously compounded long return of share

Formula continuously compounded returns

\[ r_i = \log_e \left( \frac{P_i}{P_{i-1}} \right), \quad i=1,2,3,4, \ldots n; \text{Current price of stock according to time} \]

Example: \( r_2 = \log_e \left( \frac{P_2}{P_1} \right) \), Standard deviation is calculated on the result of \( r_1, r_2, r_3 \ldots \ldots \quad r_n; \)

In case of dividend day

\[ r_1 = \log_e \left( \frac{P_i + \text{Div}}{P_{i-1}} \right) \]

According to Excel formula

\[ R2 = \ln(P2/P1) \]
\[ R2 = \ln((P2+D)/P1) \]
## Appendix-2

Data related to the interest rate of Loan and Fix Deposit of 10 banks

For the period 01\(^{st}\) April 2013 to 30\(^{th}\) September 2013

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Banks</th>
<th>Average Short term Interest on loan</th>
<th>Average Long term Interest on loan</th>
<th>Average long term interest rate on Deposit</th>
<th>Average short term interest on deposit</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>State Bank of India</td>
<td>13.64</td>
<td>10.16</td>
<td>8.87</td>
<td>6.50</td>
</tr>
<tr>
<td>02</td>
<td>Bank of Baroda</td>
<td>13.50</td>
<td>10.68</td>
<td>8.96</td>
<td>6.51</td>
</tr>
<tr>
<td>03</td>
<td>Punjab National Bank</td>
<td>15.12</td>
<td>11.77</td>
<td>9.38</td>
<td>6.18</td>
</tr>
<tr>
<td>04</td>
<td>Canara Bank</td>
<td>13.75</td>
<td>10.92</td>
<td>10.46</td>
<td>6.75</td>
</tr>
<tr>
<td>05</td>
<td>Bank of India</td>
<td>13.62</td>
<td>11.10</td>
<td>8.84</td>
<td>6.74</td>
</tr>
<tr>
<td>06</td>
<td>IDBI Bank</td>
<td>13.5</td>
<td>10.88</td>
<td>8.75</td>
<td>6.82</td>
</tr>
<tr>
<td>07</td>
<td>Union Bank</td>
<td>13.37</td>
<td>11.66</td>
<td>9.21</td>
<td>6.33</td>
</tr>
<tr>
<td>08</td>
<td>Central Bank</td>
<td>13.55</td>
<td>10.12</td>
<td>8.87</td>
<td>6.42</td>
</tr>
<tr>
<td>09</td>
<td>Syndicate Bank</td>
<td>13.67</td>
<td>11.00</td>
<td>8.67</td>
<td>6.69</td>
</tr>
<tr>
<td>10</td>
<td>UCO Bank</td>
<td>14.24</td>
<td>11.38</td>
<td>8.73</td>
<td>7.34</td>
</tr>
</tbody>
</table>

Source: Information retrieved from related banks WebPages and also gathered information personally from related branch of above banks for more specification.
Appendix-3

Instruments Used in Experiment

OPTIDX
OPTISTK

Symbols used

BANKNIFTY
ALBK
BANKBARODA
SBIN
PNB
SYNDBANK
CANBK
IDBI