**======HW 9.D Report======**

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b) Simulated SD/SE for different NT/NSIM

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Batch 1 | NT | NSIM | Put SD | Put SE | Call SD | Call SE |
| 100 | 10000 | 6.0547 | 0.060547 | 4.54234 | 0.0454234 |
| 100 | 100000 | 6.05775 | 0.0191563 | 4.51298 | 0.0142713 |
| 100 | 500000 | 6.04317 | 0.00854633 | 4.52284 | 0.00639626 |
| 300 | 10000 | 6.05763 | 0.061023 | 4.59511 | 0.0459511 |
| 300 | 100000 | 6.04892 | 0.0193365 | 4.54733 | 0.0143799 |
| 300 | 500000 | 6.05213 | 0.00847786 | 4.52713 | 0.00640233 |

**(Batch 1: The exact Put Price is 5.84628, The exact Call Price is 2.13337)**

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| --- | --- | --- | --- | --- | --- | --- |
| Batch 1 | NT | NSIM | Put SD | Put SE | Call SD | Call SE |
| 100 | 10000 | 10.435 | 0.10435 | 13.212 | 0.13212 |
| 100 | 100000 | 10.4359 | 0.0330012 | 13.1477 | 0.0415767 |
| 100 | 500000 | 10.4019 | 0.0147105 | 13.17 | 0.0186253 |
| 300 | 10000 | 10.4754 | 0.104754 | 13.3135 | 0.133135 |
| 300 | 100000 | 10.4292 | 0.0329801 | 13.2328 | 0.0418458 |
| 300 | 500000 | 10.4241 | 0.0147419 | 13.1421 | 0.0185857 |

**(Batch 2: The exact Put price is 7.96557, The exact Call Price is 7.96557)**

**Observation 1: SD depends on neither NT nor NSIM**

**Observation 2: SE depends on NSIM but not NT. SE will decrease while NSIM increases.**

**Observation 3: SD doesn’t have any correlation with accuracy.**

**Observation 4: When SE is smaller, the simulation tends to have higher accuracy.**