# Finance Quantitative

Modèle Black-Scholes

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## Black-Scholes Model (1)

| | |
|---|---|
| Type | Call |
| Strike | 50 |
| Spot | 55 |
| Maturity | 3 months |
| Interest rate | 3% |
| Dividend yield | 0% |
| Volatility | .30 |

Table 1: Characteristics of an European option

- Use the Black-Scholes model to price the option described in Table 1.
- Assumes that a trader sells this option, and intends to delta-hedge her position. Compute the transactions that she will initiate to create her hedge portfolio.

## Black-Scholes Model (2)

On March 21, 2012, GOOG quotes $636.91. Table 2 provides the prices of selected options expiring on 18 Jan 2013:

| Type | Strike | Price |
|---|---|---|
| Call | 635 | 60.70 |
| Put | 635 | 59.70 |

Table 2: Prices of options on GOOG

Assume an interest rate of 1.0%. Google does not pay any dividend.

- Compute the implied volatility for the call and the put. Comment your results.
- Use this result to price a call with strike 650.