Arbitrage&Pricing
Paris Dauphine University - Master IEF (272)

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Exercises Chapter 2

Exercise 1 *A stock price is currently \$40. It is known that at the end of one month it will be either \$42 or \$38.*
The risk-free interest rate is 8% per annum with continuous compounding.

What is the value of a one-month European call option with a strike price of \$39? Solve the problem using a riskless portfolio that sells one unit of the option.

Exercise 2 *Solve Exercise 1 using the risk-neutral probability (a.k.a. equivalent martingale) measure approach.*

Exercise 3 *A stock price is currently \$50. It is known that at the end of six months it will be either \$45 or \$55.*

The risk-free interest rate is 10% per annum with continuous compounding.

What is the value of a six-month European put option with a strike price of \$50? Solve the problem using a riskless portfolio that sells one unit of the option.

Exercise 4 *Solve Exercise 3 using the risk-neutral probability (a.k.a. equivalent martingale) measure approach.*

Exercise 5 (introduction to the next chapter) *A stock price is currently \$100. Over each of the next two six-month periods it is expected to go up by 10% or down by 10%.*
The risk-free interest rate is 8% per annum with continuous compounding.

What is the value of a one-year European call option with a strike price of \$100?