

University of California, Los Angeles
Department of Statistics

Statistics C183/C283

Instructor: Nicolas Christou

Homework 4

Exercise 1:

An investor sells a European call on a share for \$4. The stock price is \$47 and the exercise price is \$50. When does the investor make a profit? When will the option be exercised? Draw a diagram showing the investors profit against the price of the stock at expiration.

Exercise 2:

An investor buys a European put on a share for \$3. The stock price is \$42 and the exercise price is \$40. When does the investor make a profit? When will the option be exercised? Draw a diagram showing the investors profit against the price of the stock at expiration.

Exercise 3:

You want to purchase 2 puts and 1 call. The call option costs \$5 and the put option costs \$6. The exercise price for the call or the put is \$50. Plot the profit against the stock price at the expiration date:

- a. For the 2 puts.
- b. For the call.
- c. For the combination of the 2 puts and 1 call.

Exercise 4:

Consider the following strategy: You write 2 call options (each one with $E = \$45, C = \5) and you buy 1 call option (with $E = \$40, C = \8). Both buying and selling call options have the same expiration date. Plot the profit against the stock price at the expiration date for this strategy.

Exercise 5:

Consider the box spread strategy: It is a combination of a bull call spread and a bear put spread.
Bull call spread: Buy one call with exercise $E_1 = \$50$ and sell one call with exercise $E_2 = \$60$.
Bear put spread: Buy one put with exercise $E_2 = \$60$ and sell one put with exercise $E_1 = \$50$.

- a. Complete the table that shows the payoffs for all the positions above.
- b. Construct the diagram that shows the payoff for the bull call spread, for the bear put spread, and the total (box spread).