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Faculty of economics, Commercial and Management Sciences
Department of commerce
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Major: International Business
Module: Commodity Market

Answer of the exercises series n°5

Part 1: *choose the right answer*

1. The option contract is?

a. The right to own the stock of business company.
b. The right to buy a future contract.
c. The right to buy or sell an underlying asset at spot price on the expiration date.
d. The right to buy or sell an underlying asset at a strike price on or before the expiration date.

2. The Put option is?

a. The right to buy the underlying asset on or before the maturity.
b. The right to sell the underlying asset on or before the maturity.
c. The right to buy the underlying asset at a strike price on the expiration date.
d. None of the above.

3. The Call option give the holder the right to?

a. Sell an underlying asset at strike price.
b. Buy a futures contract at strike price on or before the expiration date.
c. Buy a futures contract at spot price on the expiration date.

4. The European style Put option give the right to?

a. Buy underlying asset at strike price on or before the expiration date.
b. Sell the underlying asset at strike price on or before the expiration date.
c. Buy the underlying asset at strike price on the expiration date.
d. None of the above

5. The other name for Put option buyer is ?

a. Someone who is short.
b. Someone who is bullish in the market.
c. Option holder.

6. When someone "writes" a call option, he/she has?

a. Taken a "long" position in a futures contract.
b. "marked to market" a futures contract.
c. Sold a call option.
d. Bought a call option.
e. Exercised a call option.

7. If the June crude oil futures contract were currently trading at $95/BBL, a June crude oil call option with a strike price of $90/BBL would be considered?

a. In-the-money.
b. Out-the- money

c. At-the-money

8. If the June crude oil futures contract were currently trading at $95/BBL, June crude oil put option with a strike price of $90/BBL would be considered?

a. At-of-the-money.
b. In-the-money
c. Out-the-money
d. None of the above

9. A Call option of strike price150$ was bought by paying a premium of 4$ and the underlying asset price upon expiry is162. The total profit made is ?

a. 12
b. 4
c. 8

10. An Out of Money Put option contract is ?

a. One where the strike price is under the spot price.
b. One where the strike price is above the spot price.
c. One where the strike price equal spot price.

11. If the strike price of call option is 20$, the call option said to be Out-the-money if the spot price at expiration date is equal to?

a. 20$
b. 32$
c. 15$

12. The break-even point is?

a. The price at which the profit is high.
b. The price at which the loss is limited
c. The price at which the holder doesn't makes neither profit nor loss.

Part two:

I. Assume on July A trader buys a European-style call options on October soybean futures at strike price of $12, and that the call option cost (premium) of 0.5$/bushel; the Soybean futures contract units are 5000bushels, If on October 2022, the Soybean futures price is $13/bushel, 10.8$/bushel or 12$/bushels. **Indicate the position the trader will take in each case? calculate the payoff and the profit in each case? draw the graph showing the profit of call options?**

Answer

- If on October 2022, the market price of Soybean futures is $13

The trader long call option with a strike price of 12$ becomes an **In-The-Money option**.

The trader position will **devolve into a long position in the futures contract** of Soybean; the option holder could exercise the option and buy soybean futures for $12 instead of the true market value of $13;

then, close the futures position immediately will receive the difference between the futures price and the strike price, this comes up to $1 ($13 – $12) per bushel.

Payoff = (spot price – strike price) = 13 – 12 = 1$/bushel

Profit = ((spot price - strike price) - premium)* 5,000 bushel

Profit = ((13-12)-0.5)*5000= 2500$

-If on October 2022, the market price of Soybean futures is $12,

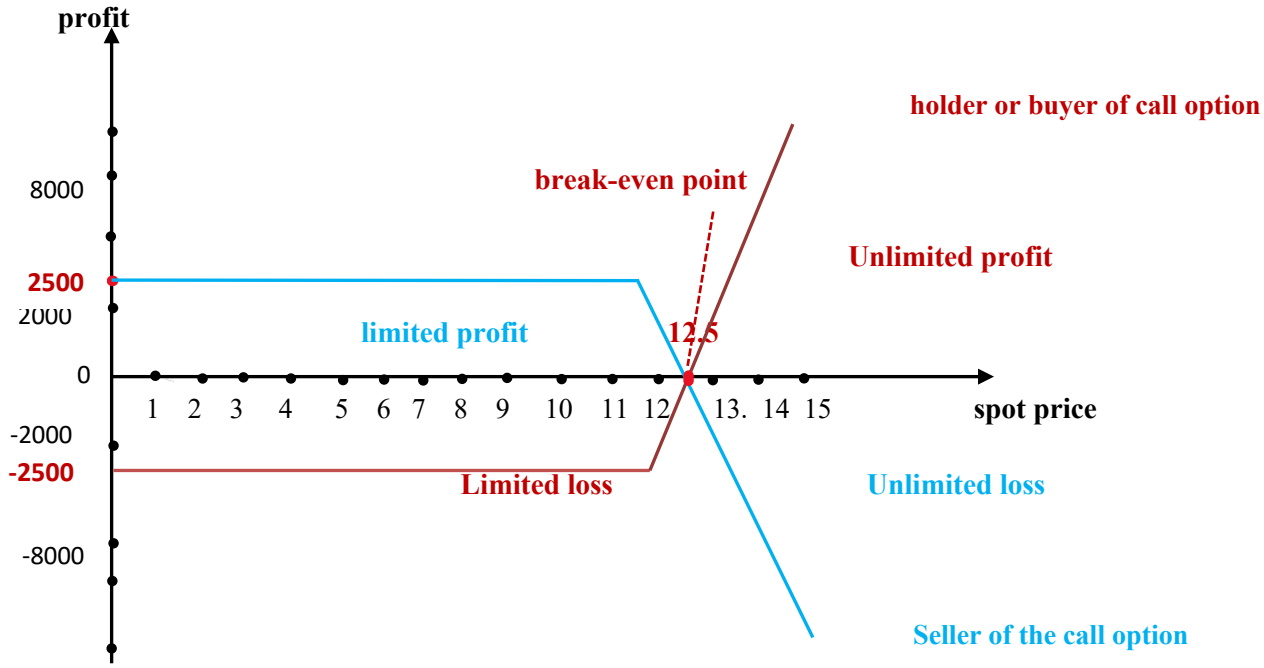
The trader long call option with a strike price of 12$ becomes an **At-The-Money option**.

The trader position can devolve into a **long position** in the futures contract of Soybean; or the contract would **expire worthless**; **in each case the call option holder would have lost the premium of 5000*0.5=2500$**

-If on October 2022, the market price of Soybean futures is $10.8.

The trader long call option with a strike price of 12$ becomes an Out-The-Money option. So, the Soybean call options will expire worthless. **The trader loss would amount to the entire premium of 2500 $ that he paid to acquire the said options.**

We can draw a graph that summarize the call option profit for both holder and seller, to do so, we have to calculate the break-even point Break-even point (call) = strike price + Premium = 12 + 0.5 = 12.5



II. Assume that on Sept. 2022, trader Helen buys European-style put options on April 2023 crude oil futures at a strike price of $70 per barrel (BBL), and that the option costs $1.5 per barrel. Crude oil futures contract units are 1,000 barrels. If on April 2023 crude oil futures price is $62/BBL, 70$/BBL or 80$/BBL. **Indicate the position the trader will take in each case? calculate the payoff and the profit in each case? draw the graph showing the profit of put options?**

Answer

I. If on April 2023, the market price of crude oil futures is $ 62,

The trader long put option with a strike price of 70$ becomes an ITM option.

The trader position will devolve into a short position in the futures contract of crude oil; the option holder could exercise the option and sell crude oil futures for $70 instead of the true market value of $62; then, close the futures position immediately will receive the difference between the futures price and the strike price. This comes up to Payoff = $8 ($70 – $62) per barrel.

Profit = ((strike price — spot price) - premium)* 1,000 bbls

Profit = ((70-62)-1.5)*1000= 6500$

If on April 2023, the market price of crude oil futures is $70,

The trader long put option with a strike price of 70 $ becomes an ATM option.

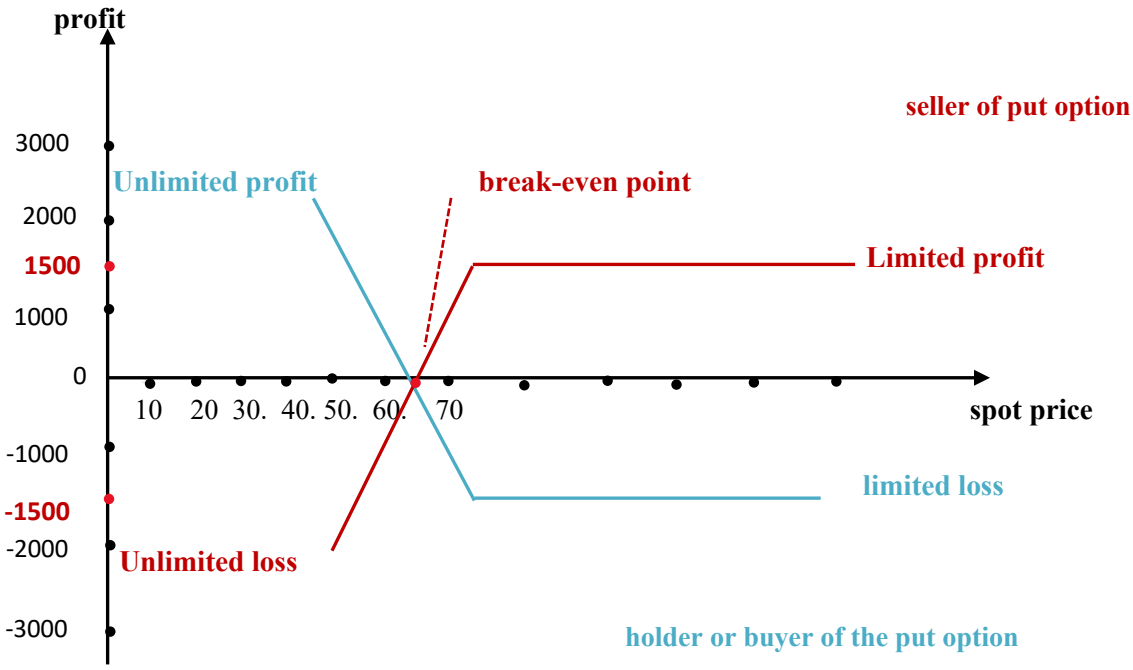
The trader position can also devolve into a short position in the futures contract of crude oil; or the contract would expire worthless; **in each case the put option holder would have lost the premium of (1.5*1000) 1500 $.**

If on April 2023, the market price of crude oil futures is $80.

The trader long put option with a strike price of 70$ becomes an OTM option.

So, the crude oil put options will expire worthless. **The trader loss would amount to the entire premium of 1500$ that he paid to acquire the said options.**

We can draw a graph that summarize the call option profit for both holder and seller, to do so, we have to calculate the break-even point Break-even point (put) = strike price - Premium = 70 - 1.5 = 68.5$


profit
seller of put option
3000
Unlimited profit
break-even point
2000
1500
Limited profit
1000
0
10
20
30.
40.
50.
60.
70
spot price
-1000
limited loss
-1500
-2000
Unlimited loss
-3000
holder or buyer of the put option