**Seminar 11 - Options**

**Theoretical questions**

1. All else the same, an American or an European-style option will be more valuable?

American

1. You purchase one MBI July 120 call contract (equaling 100 shares) for a premium of $5. You hold the option until the expiration date, when MBI stock sells for $123 per share. You will realize a \_\_\_\_\_\_ on the investment.

(3\*100) - (5\*100) =$**200 loss**

1. You write one MBI July 120 call contract (equaling 100 shares) for a premium of $4. You hold the option until the expiration date, when MBI stock sells for $121 per share. You will realize a \_\_\_\_\_\_ on the investment.

(4\*100) - (1\*100) = **$300 profit**

1. The potential loss for a writer of a naked call option on a stock is \_\_\_\_\_\_\_\_\_.

**unlimited**

1. The May 17, 2015, price quotation for a Boring call option with a strike price of $50 due to expire in November is $20.80, while the stock price of Boring is $69.80. The premium on one Boring November 50 call contract is \_\_\_\_\_\_\_\_\_.

100\*20,8=$2,080

50. You purchase one MBI March 120 put contract (equaling 1000 shares) for a put premium of $10. The maximum profit that you could gain from this strategy is \_\_\_\_\_\_\_\_\_.

100\*(120-10)=$11,000

1. You buy one Huge-Packing August 50 call contract and one Huge-Packing August 50 put contract. The call premium is $1.25, and the put premium is $4.50. Your highest potential loss from this position is \_\_\_\_\_\_\_\_\_.

(4,5+1,25)\*100= $575

1. **(535/5)** In each of the following questions, you are asked to compare two options with parameters as given. The risk-free interest rate for all cases should be assumed to be 6%.

Assume the stocks on which these options are written pay no dividends.

a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| put | T | X |  | Price of option |
| A | 0.5 | 50 | 0.2 | $10 |
| B | 0.5 | 50 | 0.25 | $10 |

Which put option is written on the stock with the lower price?

* + 1. A.
    2. B.
    3. Not enough information.

b)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| put | T | X |  | Price of option |
| A | 0.5 | 50 | 0.2 | $10 |
| B | 0.5 | 50 | 0.2 | $12 |

Which put option must be written on the stock with the lower price?

* + 1. A.
    2. B.
    3. Not enough information.

c)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| call | S | X |  | Price of option |
| A | 50 | 50 | 0.2 | $12 |
| B | 55 | 50 | 0.2 | $10 |

Which call option must have the lower time to maturity?

* + 1. A.
    2. B.
    3. Not enough information.

d)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| call | T | X | S | Price of option |
| A | 0.5 | 50 | 55 | $10 |
| B | 0.5 | 50 | 55 | $12 |

Which call option is written on the stock with higher volatility?

* + 1. A.
    2. B.
    3. Not enough information.

*Key:*

1. *Put A must be written on the lower-priced stock. Otherwise, given the lower volatility of stock A, put A would sell for less than put B.*
2. *Put B must be written on the stock with lower price. This would explain its higher value.*
3. *Call B. Despite the higher price of stock B, call B is cheaper than call A. This can be explained by a lower time to maturity.*
4. *Call B. This would explain its higher price.*

1. **(501/10)** Suppose you think Wal-Mart stock is going to appreciate substantially in value in the next six months. Say the stock’s current price, S0, is $100, and the call option expiring in six months has an exercise price, X, of $100 and is selling at a price, C, of $10. With $10,000 to invest, you are considering three alternatives.
2. Invest all $10,000 in the stock, buying 100 shares.
3. Invest all $10,000 in 1,000 options (10 contracts).
4. Buy 100 options (one contract) for $1,000, and invest the remaining $9,000 in a money market fund paying 4% in interest over six month (8% per year).

What is your rate of return for each alternative for the following four stock prices ($80, $100, $110, $120) six months from now?

*Key:*

In terms of dollar returns:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Price of Stock Six Months From Now | | | |
| Stock price: | $80 | $100 | $110 | $120 |
| All stocks (100 shares) | 8,000 | 10,000 | 11,000 | 12,000 |
| All options (1,000 shares) | 0 | 0 | 10,000 | 20,000 |
| Bills + 100 options | 9,360 | 9,360 | 10,360 | 11,360 |

In terms of rate of return, based on a $10,000 investment:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Price of Stock Six Months From Now | | | |
| Stock price: | $80 | $100 | $110 | $120 | |
| All stocks (100 shares) | -20% | 0% | 10% | 20% | |
| All options (1,000 shares) | -100% | -100% | 0% | 100% | |
| Bills + 100 options | -6.4% | -6.4% | 3.6% | 13.6% | |

