**Exchange traded Stock, Option and Bond**

**Limit and Market Order Questions**

**Question 1** (total of 21 marks):Below is a screenshot from E-Trade which shows details of CBA bank shares.

**Question 1a** (3 marks): What is the bid-ask spread on these shares?

\*$0.02 (=90.58 - 90.56)

**Question 1b** (3 marks): What is your best estimate of the 'true price' of these shares?

\*$90.57 (=(90.58 + 90.56)/2)

**Question 1c** (3 marks): What is the best price that you could **buy** one share when placing a market order?

\*$90.58.

**Question 1d** (3 marks): How much money could you **sell** **5,000** shares for? (Note that in this question you are selling, in the previous question, you were buying).

\*$452,716.35 (=613\*$90.56 + 409\*$90.55 + 3,978\*90.54)

**Question 1e** (3 marks): What would be the **implicit cost** of **selling** these 5,000 shares using a market order, given your 'true price' answered above?

\*$133.65 (=613\*(90.57 - 90.56) + 409\*(90.57 - 90.55) + 3,978\*(90.57 - 90.54))

**Question 1f** (3 marks): List **one** advantage of a placing a limit order rather than a market order.

\*Earn half the bid-ask spread.

**Question 1g** (3 marks): List **two** **dis**advantages of a placing a limit order rather than a market order.

\*The limit order may not be executed.

\*News may arrive that makes your buy limit order too high, and you fail to withdraw the order before it is executed with an opportunistic seller. So you'll lose money.

**Question 1** (total of 24 marks):Below is a screenshot from E-Trade which shows details of a call option on CBA bank shares. Note that the strike price is $77.

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**Question 1a** (3 marks): What is the bid-ask spread on these options?

\*$0.085 (=1.345 - 1.26)

**Question 1b** (3 marks): What is your best estimate of the 'true price' of these call options?

\*$1.3025 (=(1.345 + 1.26)/2)

**Question 1c** (3 marks): What is the best price that you could **buy** one call option contract when placing a market order? Be aware that one call option contract is on 100 shares and prices are listed on a per-share basis rather than a per contract basis.

\*$1.345 on a per share basis or $134.50 since one call option contract is on 100 shares.

**Question 1d** (3 marks): How much money could you **sell** 200 call options for? (Note that in this question you are selling, in the previous question, you are buying).

\*$25,175.00 (=(150\*$1.26 + 50\*$1.255)\*100)

**Question 1e** (3 marks): What would be the **implicit cost** of **selling** these 200 call options, given your 'true price' answered above?

\*$875 (=[150\*(1.3025 - 1.26) + 50\*($1.3025 - $1.255)]\*100)

**Question 1f** (3 marks): Is this call option 'in-the-money' or 'out-of-the-money'?

\*Out of the money.

**Question 1g** (3 marks): The quantity demanded by the top 5 buyers equals the quantity supplied by the top 5 sellers. Will this always be the case?

\*No, it's a coincidence.

**Question 1h** (3 marks): The CBA share price $1.07 from the previous day, but the call option fell by $0.445. Would you usually expect the value of the share to change by more than the value of the call option? Explain why or why not.

\*Yes, since the delta of the call option (change in option price divided by change in stock price) is always between zero and one.

**Question 1** (total of 15 marks):Below is a screenshot from E-Trade which shows details of BHP shares.



**Question 1a** (3 marks): What is the bid-ask spread on these shares?

\*$0.01 (=31.53 - 31.52)

**Question 1b** (3 marks): What is your best estimate of the 'true price' of these shares?

\*$31.525 (=(31.53 - 31.52)/2)

**Question 1c** (3 marks): What is the best price that you could **buy** one share when placing a market order?

\*$31.53.

**Question 1d** (3 marks): How much money could you **sell** **5,000** shares for? (Note that in this question you are selling, in the previous question, you were buying).

\*$157,570.61 (=2061\*$31.52 + (5000-2061)\* $31.51)

**Question 1e** (3 marks): What would be the **implicit cost** of **selling** these 5,000 shares using a market order, given your 'true price' answered above?

\*$54.39 (=2061\*(31.525 - 31.52) + (5000-2061)\*(31.525 - 31.51))

**Question 1** (total of 20 marks):

The next few questions relate to the data below which is a screenshot from the broking platform ETRADE showing the market depth for BHP call options. (8 marks)

|  |  |
| --- | --- |
| BHPUJ8 **- $35.00 CALL OPTION** EXPIRING 25/07/2013 **Underlying Security Details:**   BHP BLT FPO [BHP] (ASX:BHP) | As of: 22/04/2013 2:34:16 PM |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Last Price** | **Today's Change** | **Bid** | **Offer** | **Day High** | **Day Low** | **Volume** |
| $31.530 | $0.130 (.41%) | $31.520 | $31.530 | $31.580 | $31.250 | 3,891,894 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Today's Last Price** | **0.75** | **Bid** | 0.390 | **TheoreticalPrice** | 0.439 |
| **Today'sChange** | **0.34 (82.93%)** | **Offer** | 0.430 | **Days To Expiry** | 95 |
| **Open** | 0 | **PreviousClose** | 0 | **Shares per Contract** | 100 |
| **Volume** | 0 | **OpenInterest** | 474 | **Today'sRange** | 0 - 0 |
| **As at 22/04/2013 2:34:16 PM** |
|

|  |  |  |
| --- | --- | --- |
| **Buyers** |  | **Sellers** |
| **Quantity** | **Price** | **#** | **Price** | **Quantity** |
| 30 | 0.390 | **1** | 0.430 | 30 |
| 20 | 0.0380 | **2** | 0.450 | 10 |
| 0 | 0.000 | **3** | 0.000 | 0 |
| 0 | 0.000 | **4** | 0.000 | 0 |
| 0 | 0.000 | **5** | 0.000 | 0 |

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**Question 1a** (2 marks): Of the 3 choices below, where each is in bold, circle the correct answer:

The call option is **in** the money,  **at** the money, or \***out** of the money.

**Question 1b** (4 marks): ETRADE calculates the theoretical option price to be $0.439. In their FAQ they state that the theoretical option price is only a guide, but that it is calculated using the Black-Scholes option pricing equation. In one sentence, explain whether the estimated theoretical option price looks reasonable.

**Answer:** No, it is not between the bid and ask prices of $0.39 and $0.43 respectively. Either the theoretical price is wrong, or the sellers who are willing to sell at a price less than the theoretical price are idiots.

**Question 1c** (4 marks): What is the intrinsic value of this call option?

**Answer:** This option is out of the money so its intrinsic value is zero.

**Question 1d** (4 marks): What is the breakeven price of this call option?

**Answer:** The break-even price of a call option the strike price plus the option price. The option price is the mid-point of the bid-ask prices which is (0.39+0.43)/2 = $0.41. So the break-even price is $35.00 + $0.41 = $35.41.

**Question 1e** (6 marks): A trader is planning to buy 35 of the above call options by submitting a market order. Ignoring broking fees, what will be the total cost of her purchase?

**Answer:** Note that we buy from the sellers.

Also, note that each option contract is on 100 shares (Shares per contract = 100), but the option price is given as if it is on 1 share. So we must multiply the option cost by 100.

Total cost = 100 \* (30 \* 0.43 + 5 \* 0.45) = $1515.00

**Question 1** (total of 12 marks):On the right is a screenshot from E-Trade which shows the market depth for Heritage Notes (ticker: HBSHA).

**Question 1a** (3 marks): What is the bid-ask spread on these notes?

\*$0.05 (=108.6-108.55)

**Question 1b** (3 marks): What is your best estimate of the 'true price' of these notes?

\*108.575 (=(108.6+108.55)/2)

**Question 1c** (3 marks): What is the best price that you could buy **one** Heritage Note when placing a market order?

\*108.60

**Question 1d** (3 marks): How much would it cost to buy 200 notes, excluding transaction costs?

\*21762.4 (=94\*108.6 + 106\*109)