PEER-LED TEAM LEARNING DISSEMINATION

CALL OPTIONS: A PEER-LED TEAM LEARNING DEMONSTRATION WORKSHOP FOR NON-SCIENCE PARTICIPANTS

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Background

We are renting* a house with an option to buy. The current appraised value of the house is $200,000. There is good reason to believe – but no guarantee – that the value of the house will increase in the near future. We paid $10,000 up front for the option to buy the property for $250,000. We have two years to decide what we want to do before the owner can put the house back on the market. What we paid for the option does not go toward the purchase price, i.e., if at any point we decide to buy the house for the agreed upon $250,000, we still pay $250,000 not $240,000 [=$250,000-$10,000]. (* - What we pay for rent has no bearing on the problems that follow.)

Use the "think-pair-share" method for working through the following questions: Consider questions 1-9 on your own for a few minutes, and jot down your answers in the margin as you go along. Then pair up with someone in your group to compare answers, making modifications as necessary. Then have each pair share its answers with the entire group. If there are any disagreements, discuss these within the group until you reach a consensus. Get guidance from your Peer Leader if necessary.

Questions

1. If during the first year the house increases in value to $350,000 what happens to the value of our option to buy it at $250,000?

2. If the value of the house increased from $200,000 to $240,000 in **one month** how would that impact the value of the option? How does this translate into what that person might be willing to pay for the option?

3. If the value of the house increased from $200,000 to $240,000 in **eighteen months** how would that impact the value of the option? How does this translate into what that person might be willing to pay for the option?

4. Assuming we sell the option during the first year when the house is worth $350,000, what would our return on our investment be?

5. If the value of the house instead of increasing decreases, let's say to $150,000, how would this affect the value of our option?

6. Assuming at the end of two years the house is worth $150,000, what would our return on our investment be?

7. What is the maximum amount we can lose on the option?

8. Had we bought the house for $250,000 (exercised our option) at the end of one year and sold it one year later for $350,000, what would our return on our investment be? (Don't forget to include the cost of the "option to buy" since it is not subtracted from the purchase price.)

9. Which is better: Buying the house or the option?

A call option in stocks is similar . . .

In June 2004 we buy a long-term option (LEAP) for $1.00 to buy a share of MSFT (Microsoft) at $30.00 [the "strike price"]. The option expires in January of 2006. MSFT is at $25.00 when we buy the option.

10. If the value of MSFT goes up to $28.00 very quickly – say, in one week – what happens to the value of our option?

11. If the value of MSFT goes down to $20.00 in one week what happens to the value of our option?

12. If we sell the option when MSFT is at $18.00 a share, what is our return on investment (ROI)?

13. Had we bought a share of MSFT at $25.00 and sold it at $18.00 instead of having bought the option what would our ROI have been?

14. What is the maximum amount we can lose when we buy an option?

15. Reconsider question #10, i.e., the price of MSFT rises to $28.00, except in this case, it took until December 2005 to get there. How much is the option to buy at $30.00 worth at that time (remember the option expires in January 2006) as compared to what that same option is worth in June 2004? Within your group, try to formulate a general statement about "the time value of an option", that is, how does the value of an option change as one gets closer and closer to the expiration date. Consider two possible cases:
    a) where the current value of the stock is higher than the strike price;
    b) where the current value of the stock is lower than the strike price.

16. What are some of the benefits to the *seller* of selling an option on one's own shares?

Problems 17-19 are optional questions for further thought and discussion. Skip down to "Short Sales" if there is not enough time left in the session to answer problems 17-19.

17. People purchase call options when they expect (or hope) the value of a stock is going to go up. A "put" option is very similar to a "call" option, except that it gives you the right to *sell* a stock at given price, as opposed to buying it. Try to recast questions #10-16 in terms of a put option that gave the holder the right to sell MSFT at $20.00, given a current price of $25.00.

18. When investors buy a put option, what are they expecting (or hoping) the price of the stock is going to do?

19. Call options and put options are traded not just on stocks, but also on currency and "commodities": crude oil, corn, soybeans, "pork bellies", etc. All these sorts of trades comprise the "futures" market. Some people have compared futures option trading to legalized gambling. Can you think of any valid economic function that futures trading could serve?

Short Sales

Use the group round-robin method for answer these questions. That is, each person in the group in succession should give (and explain) his or her answer to the next question. If there is anyone in the group who does not agree with the given answer, group discussion should be used to resolve the disagreement.

Imagine you "borrowed" a friend's SUV and sold it for $20,000, its current value. Gas prices rise and demand for SUV's falls, so the price of the vehicle you sold for $20,000 drops to $12,500.

1. If you now buy an SUV at $12,500 and give it back to your friend, you may lose a friend, but how much money would you have gained?

2. How much did it cost you to earn this money?

3. What would have happened if, say, gas prices had dropped and the cost of SUV's had risen instead of falling?

4. How will this affect your earnings from this "short sale?"

5. What is the maximum amount you can lose on this transaction?

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