

## EXAMPLES OF BUYING ON MARGIN & SHORT SALE

ECON 435

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### Buying on Margin

- **Two important concepts:**
- 1. Initial Margin = fraction of your total security holdings that initially needs to be financed with your own funds (Set by the FED at 50%)
- 2. Maintenance margin = percentage of your total security holdings that needs to be covered by your net worth.

### EXAMPLE 1

- You want to buy as many shares of Google as you can now. The stock price of Google is \$500, and you only have \$10k. If you are allowed to buy on margin, how many shares of Google can you buy now?
- **Solution:**
- All the money you can use to buy stock
- = money you have + money you can borrow (margin)
- = \$10k + \$10k
- = \$20k
- Shares of Google = (All the money you can use)/(Stock price of Google) = \$20k/\$500 = 40

### EXAMPLE 2

- After you buy the stock for a week, the stock price of Google went down to \$400. What is the margin of your stock account now? Will you get a margin call from your broker?
- **Solution:**
- Your net worth
- = total security holdings – money you borrowed
- = 40\*\$400 - \$10k
- = \$6k
- Margin = (your net worth) / (total security holdings)
- = \$6k / \$16k = 37.5% > 30%
- Your margin is 37.5% and you will NOT get a margin call.

### EXAMPLE 3

- After another week, the stock price of Google went down to \$300. What is the margin of your stock account now? Will you get a margin call from your broker?
- **Solution:**
- Your net worth
- = total security holdings – money you borrowed
- = 40\*\$300 - \$10k = \$2k
- Margin = (your net worth)/(total security holdings)
- = \$2k/\$12k = 16.7% < 30%
- Your margin is 16.7% and you WILL get a margin call

### EXAMPLE 4

- When you get a margin call from your broker, you need to either add more net worth to your account, or sell securities from your account.
- For the first option, how much cash do you need to add to your account?
- **Solution:**
- Margin = (your net worth)/(total security holdings)
- = \$2k/\$12k = 16.7% < 30%
- You need your net worth to be at least 30% of your total security holdings, i.e., your net worth should = \$12k\*30% = \$3.6k
- The amount of money you need to add to your account =
- \$3.6k - \$2k = 1.6k

### EXAMPLE 5

- For the second option, how many shares of stock do you need to sell from your account?
- Solution:
- $\text{Margin} = (\text{your net worth}) / (\text{total security holdings})$
- $= \$2k / \$12k = 16.7\% < 30\%$
- Let the number of stocks you need to sell be X
- Then X should be the smallest integer satisfying:
- $\$2k / (\$12k - \$300 * X) \geq 30\%$
- Simple calculation yields: X=18
- You need to sell 18 shares of Google from your account.

### EXAMPLE OF SHORT SALE

- Short Sale:
- Borrowing and selling a security you do not own to speculate on falling prices.
- If price falls: You make a profit
- If price rises: You make a loss

### EXAMPLE 6

- You have \$10k in your broker's account, and you sell short 200 shares of TM that you borrowed. The current stock price of TM is \$75. What is the net worth of your portfolio now?
- Solution:
- $\text{Portfolio Net Worth} = (\text{what you own}) - (\text{what you owe})$
- $= \$10k + (\$75 * 200) - (\$75 * 200)$
- $= \$10k$
- $\text{Initial Margin} = (\text{Net Worth}) / (\text{Total Security Value You Owe})$
- $= \$10k / (\$75 * 200) = 66.7\% > 50\%$

### EXAMPLE 7

- Scenario 1:
- A week later, the stock price of TM went down to \$50! What is the net worth of your portfolio now?
- Solution:
- $\text{Portfolio Net Worth} = (\text{what you own}) - (\text{what you owe})$
- $= \$10k + (\$75 * 200) - (\$50 * 200)$
- $= \$15k$
- When the stock price falls, you make a profit! The more the stock price falls, the more money you will make!
- $\text{Maintenance Margin} = (\text{Net Worth}) / (\text{Total Security Value You Owe})$
- $= \$15k / (\$50 * 200) = 150\% \gg 30\%$

### EXAMPLE 8

- Scenario 2:
- A week later, the stock price of TM went up to \$100! What is the net worth of your portfolio now?
- Solution:
- $\text{Portfolio Net Worth} = (\text{what you own}) - (\text{what you owe})$
- $= \$10k + (\$75 * 200) - (\$100 * 200)$
- $= \$5k$  ( less than the original net value! )
- When the stock price rises, you make a loss!
- $\text{Maintenance Margin} = (\text{Net Worth}) / (\text{Total Security Value You Owe})$
- $= \$5k / (\$100 * 200) = 25\%$
- Add How Much Money to Your Account?
- $\$20k * 30\% - \$5k = \$1k$